Vol. 901 Number 3

OFFICIAL GAZETTE

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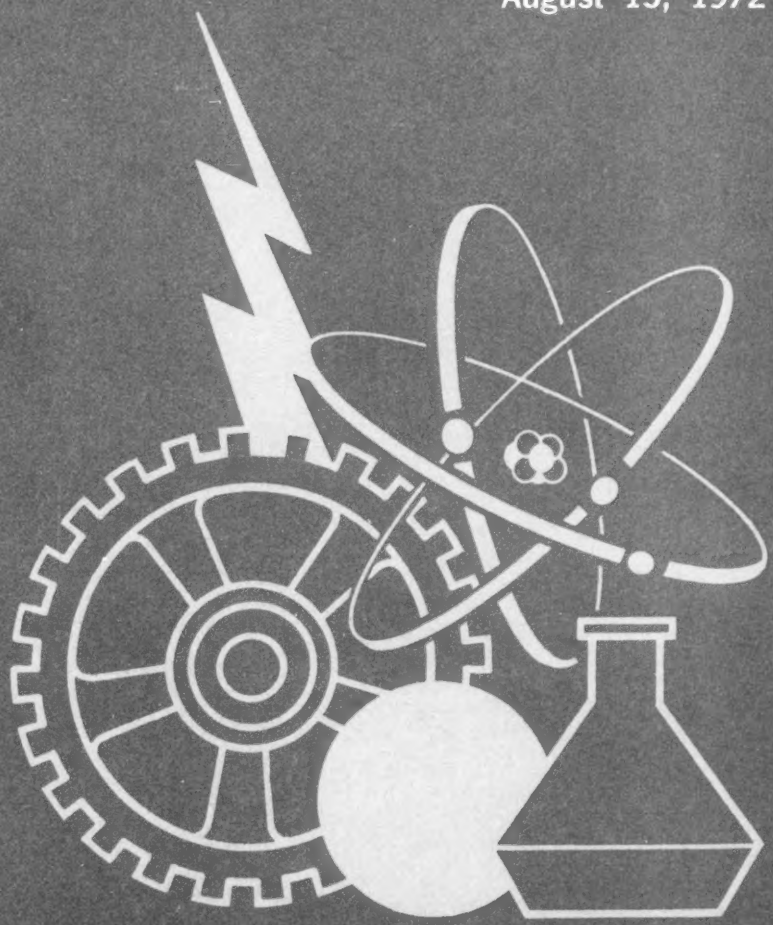
PATENTS

August 15, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 15, 1972 Volume 901 Number 3

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before September 15, 1972.

Behrens, Arthur H., 1614 N. Wakefield St., Arlington, Va. 22207.

Farrell, Andrew H., 812 Fulton Ave., Falls Church, Va. 22046.

Kallam, James D. 2101 N. 18th St., Arlington, Va. 22201.

Katz, Elliott A., 4149 S. 4 Mile Run Drive, Apt. 103, Arlington, Va. 22204.

Levow, Tobias E., 1115 Dunoon Road, Silver Spring, Md. 20903.

Myers, Lewis H., Rte. 5, Ridge Road, Frederick, Md. 21701.

LUTRELLE F. PARKER,
July 18, 1972. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,452,549, C. E. Cleeton, DOUBLE PULSE GENERATOR; **2,471,413,** same, PULSE CODE-SIGNAL SYSTEM, **filed** Jan. 13, 1965, D.C. Md. (Baltimore), Doc. 16092C, *Claud E. Cleeton and Sarah Cleeton Kakaley* v. *Hewlett-Packard Company.* Judgment entered in favor of defendant and against plaintiffs, Apr. 3, 1972.

2,471,413. (See 2,452,549.)

2,690,610, Begle and Gaudreau, MILLING CUTTER; **3,273,-222,** J. H. Begle, CUTTING TOOL AND METHOD; **3,487,535,** same, METHOD OF ASSEMBLING AND MAINTAINING CUTTING TOOL, **filed** Feb. 4, 1972, D.C., E.D. Mich. (Detroit), Doc. 37792, *Kysor Industrial Corp.* v. *Indexomatic, Inc. and Thomas C. Meggas.*

2,942,512. (See 3,038,363.)

2,949,053. (See 3,038,363.)

3,038,363, B. F. Miessner, ELECTRONIC PIANO; **2,942,512,** same; **2,949,053,** C. W. Andersen, TONE GENERATOR, **filed** May 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1146, *The Wurlitzer Company* v. *Neil A. Kjos Music Company.* By Stipulation case dismissed, July 12, 1971.

3,096,048, P. E. Yost, HEATED GAS GENERATOR FOR BALLOON; **3,131,889,** same, BALLOON STRUCTURE WITH RELEASE MECHANISM; **3,229,932,** same, MANEUVERING VALVE FOR HOT AIR BALLOON, **filed** Dec. 17, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2841–DWW, *Raven Industries, Inc.* v. *Donald L. Piccard.* Stipulation of dismissal pursuant to Rule 41(a) and (c) of FRCP without prejudice; litigation settled by agreement, Jan. 24, 1972.

3,127,668, W. C. Troy, HIGH STRENGTH-VARIABLE POROSITY SINTERED METAL FIBER ARTICLES AND MEHOD OF MAKING THE SAME; **3,437,457,** J. I. Fisher, REINFORCED METAL FIBER COMPOSITES; **3,490,902,** same, METAL FIBER REINFORCEMENT, **filed** Oct. 5, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2461, *A.R.F. Development Corp. et al.* v. *Brunswick Corp.* By agreement, cause dismissed, Aug. 24, 1971.

3,131,889. (See 3,096,048.)

3,168,130, E. W. Turpin, WHEEL SUPPORTING AND TIRE DISMOUNTING APPARATUS; **3,267,977,** same, SUPPORT DEVICE FOR VEHICLE WHEELS, **filed** Feb. 3, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–121, *Big Four Automotive Equipment Corp.* v. *George Michael Jordan, doing business as Tire Service Equipment Rep., Tire Handling Equipment Rep.*

3,172,289, S. N. Blackman, GLASS THERMOMETER; **3,316,-076,** same, METHOD OF MARKING MERCURY GLASS THERMOMETERS, **filed** May 29, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69C595, *Seymour N. Blackman et al.* v. *Hadron, Inc.* Order of dismissal, Feb. 7, 1972.

3,229,932. (See 3,096,048.)

3,267,977. (See 3,168,130.)

3,273,222. (See 2,690,610.)

3,286,606. (See 3,304,101.)

3,288,041. (See 3,304,101.)

3,304,101, J. D. Layton, COUPLING MECHANISM FOR TRAILERS; **3,288,041,** same, MULTIPLE-USE PAVER; **3,-286,606,** same, HEATED SCREED ASSEMBLY, **filed** Dec. 4, 1970, D.C., E.D. Mo. ((St. Louis), Doc. 70C607(1), *Layton Mfg. Co.* v. *Ford Lane Equipment Co., Inc. and Kenneth Greening.* Stipulation for dismissal, cause dismissed with prejudice and defendants' counterclaims dismissed with prejudice, Dec. 13, 1971.

3,316,076. (See 3,172,289.)

3,437,457. (See 3,127,668.)

3,487,535. (See 2,690,610.)

3,490,902. (See 3,127,668.)

3,501,624. (See 3,539,860.)

3,539,860, Max and Porter, VECTOR GENERATOR; **3,501,-624,** J. D. Grandine, HYBRID COMPUTER INCORPORATING A STORED PROGRAM DIGITAL COMPUTER OF THE SOURCE-DESTINATION TYPE, **filed** Feb. 7, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–282–MML, *Adage, Inc.* v. *Vector General, Inc.*

3,581,650, F. J. McCabe, COMBINATION AIR DAMPER; **D. 221,655,** same, AIR DAMPER, **filed** Mar. 21, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72–558, *Francis J. McCabe* v. *Air Balance, Inc.*

3,601,609, W. L. Yauger, Jr., IONIZATION DETECTION DEVICE USING A NICKEL–63 RADIOACTIVE SOURCE, **filed** Mar. 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c580, *Tracor, Inc.* v. *Hewlett-Packard Co. et al.*

3,609,679, R. E. Updegraff and D'Ausilio, EARTH FIELD VEHICLE DETECTOR, **filed** Dec. 8, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2887–EC, *Threshold Engineering, Inc.* v. *Signal Laboratories, Inc. et al.*

3,613,333, H. E. Gardenier, PROCESS AND APPARATUS FOR CLEANING AND PUMPING CONTAMINATED INDUSTRIAL GASES, **filed** Dec. 21, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–5381–B, *Aronetics, Inc.* v. *Lone Star Steel Company.*

3,620,909, C. R. Gleason, METHOD FOR RECLAIMING PULP FROM WASTE PAPERS, **filed** Mar. 16, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c684, *Clark Products, Inc.* v. *Waste Paper Reclaim Corp., C. Roy Gleason, Gordon Thomas and Charles H. Barthel.*

3,631,631, J. I. Greenstein, PNEUMATIC ABRASIVE CUTTING APPARATUS, **filed** Mar. 2, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–461–CC, *Dental Gold Company, doing business as American Gold Company* v. *Futurecraft Corporation.*

3,632,879, R. Freisinger, AUTOMATIC TELEPHONE DIALER FOR EMERGENCY MESSAGES, **filed** Mar. 28, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–404, *Napco Security Systems, Inc.* v. *Atlantic Metal Products, Inc.*

3,646,623, Harris and Behnke, BEDFRAME ASSEMBLY, **filed** Mar. 13, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c649, *Harris-Hub Co.* v. *Lear Siegler, Inc.*

Re. 27,126, W. P. Gingery, DUAL SPLINED SHAFT ASSEMBLY FOR A CLUTCH, **filed** Jan. 31, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c264, *Super-Drive Products, Inc.* v. *Illinois Auto Truck Co., Inc.*

D. 191,144, G. Schanz, COMBINATION SORTING AND STACKING CASE, **filed** Aug. 30, 1967, D.C., E.D.N.Y. (Brooklyn), Doc. 67C847, *G. B. Lewis Co.* v. *Gould Products, Inc., etc.* Judgment as against plaintiffs, dismissing complaint, Mar. 23, 1972.

D. 219,776, E. C. Jacobs, DISPENSER FOR TOILET TANKS, **filed** Mar. 29, 1972, D.C., N.D. Calif. (San Francisco), Doc. C72–570, *Carl Jacobs* v. *Kenneth Edwards and Robert Castronovo.*

D. 221,655. (See 3,581,650.)

Erratum

In the OFFICIAL GAZETTE of Apr. 4, 1972, vol. 897, page 2, paragraph 12, beginning with 3,485,234, the last line "Defendant infringed, permanently enjoined, Dec. 9, 1971," should be deleted, as this case is still pending in the District Court.

Certificates of Corrections for the Week of Aug. 15, 1972

Re. 27,194	3,629,857	3,637,464	3,648,418
3,190,165	3,630,995	3,637,465	3,648,494
3,445,583	3,630,996	3,637,477	3,648,498
3,516,765	3,631,281	3,637,479	3,648,629
3,529,341	3,631,420	3,637,512	3,648,669
3,532,750	3,632,069	3,637,517	3,648,775
3,536,483	3,632,472	3,637,566	3,648,784
3,560,770	3,632,663	3,637,886	3,648,857
3,579,067	3,632,822	3,637,927	3,649,142
3,586,729	3,633,606	3,638,001	3,649,150
3,591,577	3,633,667	3,638,055	3,649,772
3,596,317	3,633,730	3,638,088	3,649,881
3,600,619	3,633,895	3,638,091	3,650,332
3,601,042	3,633,908	3,638,145	3,650,368
3,601,545	3,634,422	3,638,177	3,650,743
3,602,281	3,634,518	3,638,192	3,650,771
3,603,064	3,634,589	3,638,223	3,650,808
3,605,613	3,634,626	3,638,236	3,651,393
3,607,941	3,634,828	3,638,640	3,651,413
3,607,991	3,635,879	3,638,760	3,651,996
3,610,281	3,635,930	3,639,668	3,652,276
3,610,541	3,635,940	3,640,176	3,652,306
3,611,199	3,635,989	3,641,330	3,652,406
3,613,954	3,636,044	3,642,248	3,652,432
3,615,991	3,636,059	3,642,825	3,652,809
3,616,151	3,636,204	3,643,601	3,652,849
3,616,417	3,636,587	3,643,912	3,652,953
3,616,701	3,636,592	3,644,267	3,653,382
3,616,876	3,636,615	3,644,281	3,653,399
3,618,059	3,636,645	3,644,346	3,653,416
3,619,344	3,636,721	3,644,989	3,653,539
3,619,351	3,636,760	3,645,358	3,654,688
3,619,372	3,636,804	3,646,169	3,654,900
3,620,988	3,636,817	3,646,194	3,655,613
3,621,577	3,636,940	3,646,200	3,655,714
3,623,696	3,636,952	3,646,538	3,656,153
3,624,206	3,636,964	3,647,166	3,656,853
3,624,343	3,637,001	3,647,358	3,656,918
3,624,793	3,637,018	3,647,376	3,657,110
3,626,664	3,637,144	3,647,492	3,657,385
3,627,070	3,637,186	3,648,230	3,657,595
3,628,610	3,637,187	3,648,248	3,658,021
3,628,835	3,637,352	3,648,312	3,659,096
3,629,361	3,637,402	3,648,330	3,660,084
3,629,494	3,637,435	3,648,360	3,660,247

Disclaimers

3,201,136.—*George C. Harrison*, Roseville, and *Lester G. Asdahl*, Maplewood, Minn. PIPE JOINT OF CAST IN PLACE POLYURETHANE. Patent dated Aug. 17, 1965. Disclaimer filed May 25, 1972, by the assignee, *Minnesota Mining and Manufacturing Company*.

Hereby enters this disclaimer to all claims of said patent.

3,281,547.—*Joseph J. Everard*, Manitowoc, Wis. RANGE TIMER HAVING PARALLEL WALLS WHICH INCLUDE FIRST AND SECOND MAGNETIC PORTIONS. Patent dated Oct. 25, 1966. Disclaimer filed May 26, 1972, by the assignee, *AMF Incorporated*.

Hereby enters this disclaimer to claims 1 to 7 of said patent.

3,459,302.—*David S. Ross*, Lorain, Ohio. APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT. Patent dated Aug. 5, 1969. Disclaimer filed May 26, 1972, by the assignee, *Hydro-Clear Corporation*.

Hereby enters this disclaimer to claims 1, 2, 4, 7, 8 and 9 of said patent.

3,552,283.—*David Lockman Babcock* and *Hubert Nerwin*, Rochester, N.Y. GROUND PLANE INDICIA MEANS. Patent dated Jan. 5, 1971. Disclaimer filed June 5, 1972, by the assignee, *Eastman Kodak Company*.

Hereby enters this disclaimer to claims 6 and 8 through 13 of said patent.

3,585,552.—*Landis E. Feather*, Sharon, and *Paul Voytik*, Sharpsville, Pa. ELECTRICAL APPARATUS. Patent dated June 15, 1971. Disclaimer filed June 8, 1972, by the assignee, *Westinghouse Electric Corporation*.

Hereby enters this disclaimer to claims 1 through 14 of said patent.

3,622,332.—*John R. Kane*, Piffard, N.Y. PHOTOGRAPHIC PROCESS WITH IMPROVED ACTIVATOR COMPOSITION. Patent dated Nov. 23, 1971. Disclaimer filed May 30, 1972, by the assignee, *Itek Corporation*.

Hereby enters this disclaimer to all claims of said patent.

Dedications

3,031,299.—*Charles B. Criner*, Murrysville, Pa. ALUMINUM BASE ALLOY. Patent dated Apr. 24, 1962. Dedication filed May 26, 1972, by the assignee, *Aluminum Company of America*.

Hereby dedicates to the Public the remaining term of said patent.

3,471,384.—*Clarence E. Albertson*, Villa Park, Ill. ELECTROLYTIC METHOD OF OXYGEN GENERATION. Patent dated Oct. 7, 1969. Dedication filed May 24, 1972, by the assignee, *Borg-Warner Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimer and Dedication

2,918,160.—*Wirt L. Thompson, Jr.*, Fairfield, Conn. INKED PRINTING RIBBON FOR USE IN TYPEWRITERS OR THE LIKE AND METHOD OF MAKING THE SAME. Patent dated Dec. 22, 1959. Disclaimer and dedication filed, June 2, 1972, by the inventor.

Hereby disclaims and dedicates to the Public, all that portion of the term of said patent subsequent to Jan. 7, 1972.

Patent Numbers for Which No Patents Exist

Issue of August 15, 1972

3,683,434	3,683,836	3,684,249	3,684,663
3,683,435	3,683,858	3,684,266	3,684,671
3,683,457	3,683,860	3,684,281	3,684,677
3,683,472	3,683,863	3,684,286	3,684,690
3,683,507	3,683,865	3,684,289	3,684,696
3,683,518	3,683,872	3,684,313	3,684,708
3,683,528	3,683,888	3,684,315	3,684,716
3,683,531	3,683,895	3,684,326	3,684,717
3,683,539	3,683,920	3,684,353	3,684,718
3,683,540	3,683,946	3,684,361	3,684,721
3,683,545	3,683,952	3,684,369	3,684,725
3,683,568	3,683,963	3,684,382	3,684,750
3,683,570	3,683,967	3,684,388	3,684,751
3,683,587	3,683,986	3,684,394	3,684,757
3,683,604	3,684,017	3,684,399	3,684,762
3,683,609	3,684,020	3,684,403	3,684,772
3,683,639	3,684,024	3,684,407	3,684,788
3,683,641	3,684,036	3,684,414	3,684,795
3,683,646	3,684,083	3,684,444	3,684,804
3,683,672	3,684,107	3,684,445	3,684,815
3,683,687	3,684,109	3,684,449	3,684,836
3,683,689	3,684,111	3,684,487	3,684,881
3,683,695	3,684,134	3,684,504	3,684,894
3,683,709	3,684,138	3,684,524	3,684,946
3,683,715	3,684,154	3,684,535	3,684,957
3,683,723	3,684,165	3,684,541	3,684,966
3,683,727	3,684,181	3,684,555	3,684,984
3,683,745	3,684,193	3,684,570	3,684,990
3,683,750	3,684,201	3,684,571	3,685,010
3,683,775	3,684,204	3,684,599	3,685,017
3,683,794	3,684,218	3,684,624	3,685,032
3,683,810	3,684,226	3,684,625	3,685,042
3,683,812	3,684,227	3,684,629	
3,683,813	3,684,231	3,684,634	
3,683,819	3,684,246	3,684,638	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
Deputy Assistant Commissioner (Vacant)

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-14-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-26-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-07-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-01-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
PHYSICS, GROUP 280—Director (Vacant). Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-16-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-02-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	7-16-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	6-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,200, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 15, 1972

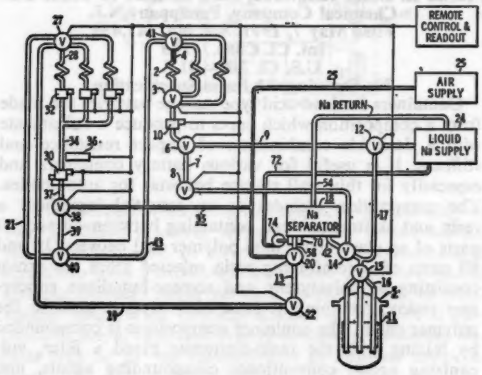
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T901,026
APPARATUS FOR POWER AND BREEDING DISTRIBUTION MEASUREMENTS IN BREEDER REACTORS

Norman P. Goldstein and Kuan H. Sun, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1970, Ser. No. 88,605
Int. Cl. G01t *1/16, 3/00*
U.S. Cl. 250—83.3 R
4 Sheets Drawing. 28 Pages Speficiation



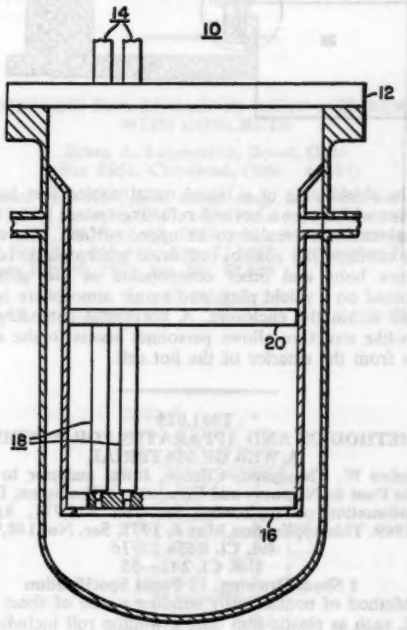
A method and apparatus is presented for determining the power and breeding distribution within a breeder reactor. Detectors comprising small diameter BeO balls **4** are introduced into a series of columnar tubes **16** running longitudinally through various parts of the reactor **5**. After a short period of irradiation the detectors are sequentially transferred out of the reactor columns to a sodium separator **18** which is provided to drain and remove the active sodium surrounding the detectors. Upon exiting the sodium separator the detectors are conveyed to a parallel arrangement of storage conduits **28** in accardance with the original columnar array formed within the reactor. Once filled, the columns **28** are sequentially emptied past radiation counter **36** which records the detector readings indicative of the power measurement. The connecting conduits **37**, **39** and **21** are coupled by the corresponding valves **38**, **40** and **27** to return the detectors exiting the counter to the appropriate storage columns **28**. This process is repeated until each of the storage columns **28** has been counted.

After a specified time for decay the aforementioned counting process is repeated to provide a determination of the breeding measurement. Upon exiting the counter **36** the detectors are routed to their respective initial storage conduits **2** in accordance with the original array formed within the reactor **5**. Storage conduits **2** function as a decay reservoir to enable an adequate period for radioactive decay so that the process may be repeated to supply successive breeding and power determinations.

T901,027
NUCLEAR REACTOR HAVING THERMALLY COMPENSATED SUPPORT STRUCTURE FOR A FUEL ASSEMBLY

Ray Borst, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

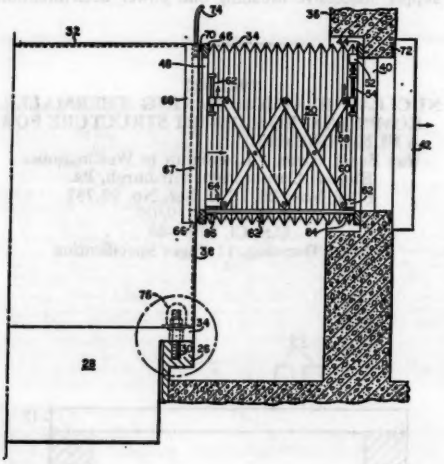
Filed Nov. 25, 1970, Ser. No. 92,781
Int. Cl. G21c *19/00*
U.S. Cl. 176—40
1 Sheet Drawing. 11 Pages Specification



There is disclosed a thermal expansion compensation system for overcoming the deformation and bowing of nuclear fuel assemblies in a reactor. The drawing shows a reactor wherein there is a top plate **12** having control rod drive mechanism **14**; a core bottom support plate **16**; a coretop hold down plate **20**; and fuel assemblies **18**. To reduce deformation or bowing of the fuel assemblies **18**

the plates 12, 16 and 18 are made of materials having thermal expansion rates such that the total thermal expansion of each of the support plates is substantially the same.

T901,028
SHIELD PLUG ACCESS ENCLOSURE FOR A NUCLEAR REACTOR
John D. Sutherland, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 11, 1971, Ser. No. 114,629
Int. Cl. G21c *19/20*
U.S. Cl. 176—27
2 Sheets Drawing. 9 Pages Specification

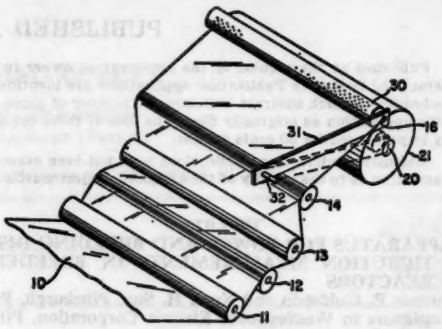


The shield plug of a liquid metal cooled fast breeder reactor which uses a hot cell refueling system has a metal access enclosure sealed to its upper surface. The enclosure contains the control rod drive mechanisms, reactor closure bolts and other components as are generally mounted on a shield plug, and an air atmosphere is provided within the enclosure. A horizontal extending bellows-like structure allows personnel access to the enclosure from the exterior of the hot cell.

T901,029
METHOD OF AND APPARATUS FOR WINDING A WEB OF MATERIAL
Gordon W. Thompson, Clinton, Iowa, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 814,711, Apr. 9, 1969. This application May 6, 1971, Ser. No. 140,982
Int. Cl. B65h *23/16*
U.S. Cl. 242—55
1 Sheet Drawing. 11 Pages Specification

Method of continuously winding a web of sheet material, such as plastic film onto a windup roll including the step of forcing air from between the layers of the web as it is wound by selectively pressing the web against the windup roll with a pressure roll having a predetermined solid area defining open areas therebetween whereby a predetermined amount of air is left between the layers to control the hardness of the wound roll.

Apparatus is provided for performing this method of winding. In such apparatus, the open surface areas of the contact roll generally constitute from 5% to 65% of the



total surface area of such roll and, preferably, from 30% to 36% thereof.

T901,030
BATTERY CONTAINER COMPOSITION AND PROCESS
Marlin R. Long, Ringwood, N.J., assignor to Texas-U.S. Chemical Company, Parsippany, N.J.
Filed May 7, 1971, Ser. No. 141,439
Int. Cl. C08c *11/18*
U.S. Cl. 260—41.5
No Drawing. 22 Pages Specification

Containers for lead-acid type storage batteries are made from a composition which cures to produce a vulcanizate with a desirable combination of impact resistance and stiffness. It is useful for various battery containers and especially for thin wall storage batteries for automobiles. The composition includes as an essential ingredient a resin and elastomer blend containing between 40 and 90 parts of an elastomeric base polymer and between 10 and 60 parts of a reinforcing resin selected from the group consisting of polystyrene and styrene-butadiene copolymer resins containing at least 60% styrene units in the polymer chain. The container composition is compounded by mixing with the resin-elastomer blend a filler, vulcanizing agent, conventional compounding agents, and mold lubricants. The resulting mixed stock is preferably granulated to produce grains of one-half inch or less in their largest dimension. The granules are then introduced into the battery case mold where the composition is cured at about 365° F.

T901,031
PROCESS FOR RECOVERING FIBERS
Malak E. Yunan, 3421 Rockfield Drive, Wilmington, Del. 19810
Filed Aug. 26, 1971, Ser. No. 175,356
Int. Cl. C08f *47/08*; C08g *53/22*
U.S. Cl. 260—2.5 N
No Drawing. 10 Pages Specification

Process for recovering individual, inflated, microcellular staple fibers from a group of such fibers which are bonded together with a thermoplastic adhesive. The process includes heating the group of bonded fibers to a temperature above which the adhesive softens but below the melting point of the polymer from which the fibers are made, agitating the group of fibers to separate them from each other, and cooling the separated fibers. The separated fibers may then be reused, along with freshly made inflated, microcellular staple fibers, for making pneumacel fiber batts.

REISSUES

AUGUST 15, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,458

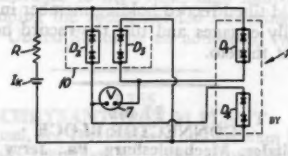
SOLID STATE TEMPERATURE MEASURING DEVICE

Karabet Simonyan, Saddle Brook, and George E. Chilton, Haworth, N.J., assignors to Computer Diode Corporation, Fair Lawn, N.J.

Original No. 3,330,158, dated July 11, 1967, Ser. No. 471,298, July 12, 1965, which is a continuation of Ser. No. 817,260, Apr. 10, 1969. Application for reissue Mar. 4, 1970, Ser. No. 19,619

Int. Cl. G01k *7/22*

U.S. Cl. 73—362 SC 10 Claims



A temperature-measuring detector having a plurality of like, similarly oriented, series-connected semiconductor junctions, arranged in direct electrical and mechanical contact to form a two-terminal element. The two-terminal element provides linear forward voltage versus environmental temperature characteristics. This element is particularly useful in bridge-type temperature-measuring circuits such as for the measurement of absolute temperatures.

27,459

WELL TREATING METHODS USING TEMPERATURE SURVEYS

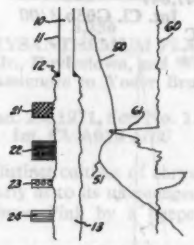
Jerry H. Guinn, Amarillo, and William Sherwood Wright, Houston, Tex., assignors to Cardinal Chemical Inc., Odessa, Tex., and Producers Chemical Service Company, Amarillo, Tex.

Original No. 3,480,079, dated Nov. 25, 1969, Ser. No. 735,313, June 7, 1968. Application for reissue Nov. 9, 1970, Ser. No. 87,862

Int. Cl. E21b *43/20, 43/24, 47/00*

U.S. Cl. 166—250 27 Claims

A method of treating wells to stimulate production from or to increase acceptance of fluids in the well strata by controlled selective treatment of the formations of the well in conjunction with temperature evaluation. Blocking and propping agents are utilized to block off each zone or strata as it is treated. Temperature gradient curves and temperature differential curves are utilized to determine the strata treated and, where multiple strata are being treated, to trace the entry of treating fluids into such strata sections or adjacent strata, and utilizing the information obtained from the temperature log to design the next stage of treatment. The process permits step by step treatment of all zones in the well, and a determination of the fact that all zones have been treated.



Blocking or diverting materials may be combined with propping agents to expedite the process.

27,460

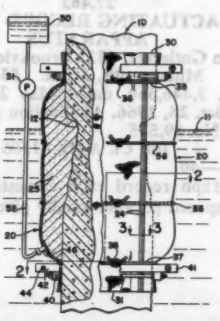
METHOD FOR ENCASING RIGID MEMBERS WITH CONCRETE

Bruce A. Lamberton, Berea, Ohio
(Box 5951, Cleveland, Ohio 44101)

Original No. 3,397,260, dated Aug. 13, 1968, Ser. No. 657,455, June 26, 1967, which is a continuation of Ser. No. 486,786, Sept. 13, 1965, and a continuation-in-part of Ser. No. 446,346, Apr. 7, 1965. Application for reissue July 30, 1970, Ser. No. 59,589

Int. Cl. B28b *1/26*

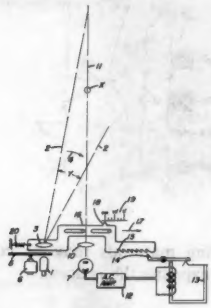
U.S. Cl. 264—86 13 Claims



A form comprised of a sleeve of flexible porous material is positioned around an elongated rigid member

with the ends of the sleeve pressed against the members to form a space between the form and the material. A cementitious slurry of a known liquid-cement ratio is pumped into the space until a pressure is built up and the form is inflated. The pumping is continued until some of the liquid in the slurry passes outwardly through the pores of the fabric and the liquid-cement ratio is lowered.

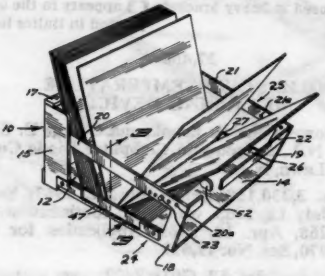
27,461
AUTOMATIC FOCUSING FOR CAMERAS
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original No. 3,443,502, dated May 13, 1969, Ser. No. 574,393, Aug. 23, 1966. Application for reissue June 19, 1970, Ser. No. 47,847
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 C **4 Claims**



A photographic camera wherein a light source emits an intermittent beam which is moved angularly to sweep the field of the camera lens. The motion of the light source is linked to and calibrated with concomitant motion of the lens-focus-adjustment, so that the lens is always focused for the distance from lens to the point at which the light beam crosses a line-of-sight path between the lens and the object. A sensor, selectively responsive to the intermittent light beamed by the light source, is positioned to receive light reflected from the object and, upon receiving this reflected light, the displacement of the focus-adjustment is arrested thus positioning and holding the camera lens at the correct range adjustment.

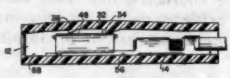
27,462
SELF-ACTUATING RECORD HOLDING APPARATUS
Julian Gutierrez, 6233 Brookview Ave. S., Minneapolis, Minn. 55424
Original No. 3,446,360, dated May 27, 1969, Ser. No. 590,252, Oct. 28, 1966. Application for reissue Sept. 4, 1970, Ser. No. 69,525
Int. Cl. A47b *81/06*
U.S. Cl. 211—40 **2 Claims**

A phonograph record rack consisting of a frame, a plurality of spaced parallel axially pivoted record holding members, each comprising a yoke portion to receive a record and having a depending leg portion of such length and arrangement as to engage an adjacent like leg portion for a sufficient interval to tilt the record holding member



of said leg portion to a point beyond its center of gravity whereby said tilted record holding member in like manner automatically engages and tilts the record holding member adjacent thereto.

27,463
CONNECTOR BLOCK
Fred C. Sitzler, Mechanicsburg, Pa., Jerry A. Kendall, Garland, Tex., and Quentin Berg, New Cumberland, Pa.; said Sitzler and said Kendall assignors to Berg Electronics, Inc.
Original No. 3,430,185, dated Feb. 25, 1969, Ser. No. 674,464, Oct. 11, 1967. Application for reissue Feb. 23, 1971, Ser. No. 118,149
Int. Cl. H01r *13/48*
U.S. Cl. 339—59 R **26 Claims**



A connector block for receiving and removably holding an electrical terminal in a cavity is provided with a cam and a latch longitudinally spaced along one side of the cavity so that during insertion of the terminal into the cavity the cam engages the terminal and holds the latch away from the terminal to prevent wearing away of the latch by repeated insertion of the terminal into the cavity. When the terminal is fully inserted, the latch falls in place to secure the terminal in the cavity. The cam and latch are located on a flexible strip formed in the side of the cavity with both ends of the strip secured to the block to facilitate movement of the cam and latch away from the terminal by flexing of the strip.

PLANT PATENTS

GRANTED AUGUST 15, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,254
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 8, 1971, Ser. No. 105,137
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—81 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared with the parent cultivar Conquest by its darker lavender pink flower color which provides a deeper shade, and by its greater resistance to high heat, high light conditions, thereby extending the recommended flowering period in the northern United States by an additional two months.

3,255
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 8, 1971, Ser. No. 105,138
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Snowpink by its 2–3″ more vigor, 5–7 days later flowering response, ½″ larger flower, longer form retention, less lavender tones in flower thereby producing a truer pink tonality, and foliage which is approximately one half inch longer and one quarter inch wider than the parent.

3,256
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 29, 1971, Ser. No. 111,159
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—81 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Snow Pink by a deeper lavender pink flower color.

3,257
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 29, 1971, Ser. No. 111,160
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly as to novelty when compared to the present cultivar Southern Sun by its more intense golden yellow color and greater resistance to fading, its flowers which are ½″ to ¾″ larger, and its improved flower form which holds 3 to 4 days longer than the parent.

PATENTS

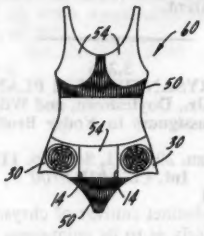
GRANTED AUGUST 15, 1972

GENERAL AND MECHANICAL

3,683,419
MOIRE PATTERN GARMENT

Robert B. Lewis, P.O. Box 2190, Aspen, Colo.

Filed Sept. 11, 1970, Ser. No. 71,615
Int. Cl. A41d 7/00, 1/00
U.S. Cl. 2—67 4 Claims

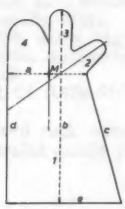


There is disclosed a garment comprising a plurality of panels connected by seams at certain of their edges to collectively form the desired shape wherein at least one of the panels is formed of two plies of flexible material, the other of which is transparent and both of which carry on one of their surfaces a visible decorative pattern and wherein each of the decorative patterns is of such character and is so disposed relative to the other as to provide through a slight relative movement between the two plies a changing moire visual effect, the plies of the panel being attached to each other at their margins so as to maintain the plies and their respective patterns in their predetermined relative positions, and the plies being unattached throughout an area centrally of the margins of the panel whereby the plies respectively throughout the area are free to move relative to each other when the garment is being worn and wherein the garment exhibits a changing moire visual effect when the wearer of the garment is in motion.

3,683,420
HOSPITAL GLOVE

Raymond Vilain, Saint-Cloud, France, assignor to Rhone-Poulence S.A., Paris, France

Filed Dec. 9, 1970, Ser. No. 96,450
Claims priority, application France, Dec. 9, 1969, 6942554
Int. Cl. A41d 19/02
U.S. Cl. 2—161 R 3 Claims

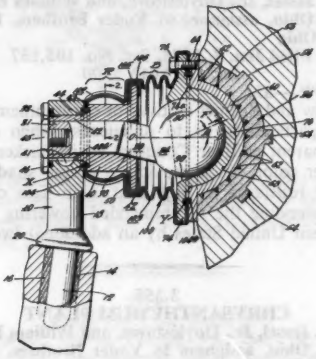


A hospital glove consisting of two thin sheets of thermoplastics material cut to shape and heat sealed round the edges to form a glove with a thumb recess, an index finger recess and a single recess for the other three fingers. The glove extends up to the wearer's elbow. The shape of the glove differs from that of a normal hand in that it is approximately twice as wide in the region corresponding to the hand.

3,683,421
PROSTHETIC JOINT ASSEMBLY

Howard M. Martinie, King of Prussia, Pa., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed July 13, 1970, Ser. No. 54,523
Int. Cl. A61f 1/24
U.S. Cl. 3—1 10 Claims

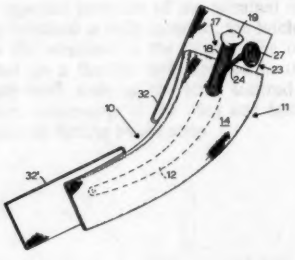


A prosthetic joint assembly for supporting first and second bone members for relative movement comprising a pin member adapted to seat in a pocket formed in the first bone member, a socket assembly adapted to be mounted in the second bone member, a connecting member connected at one end to said pin member and having at its opposite end a ball journalled in the socket assembly and an outer seal member defining a lubricant pocket for the ball end of the connecting member and seat.

3,683,422
BONE PROSTHESIS

August L. Stemmer; Paul Kahn, both of San Francisco, and James A. Stubstad, Lafayette, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 833,824, June 16, 1969, abandoned. This application Aug. 10, 1970, Ser. No. 62,536
Int. Cl. A61f 1/24, 1/00
U.S. Cl. 3—1 25 Claims



A prosthetic device with sub-periosteal, periosteal, or bone surface attachment for stress support, comprising a rigid rein-

forcing member and an elastomer-impregnated fibrous or woven fabric covering such member and firmly fixed to it. In one embodiment, a fibrous reinforced elastomer condyle-like member is affixed to one end of such reinforcing member, and a flexible pedicle extends outwardly from such condyle-like member and has at its remote end a bone-attaching head comprising a flat or disc base with a bone-exposed covering or coating of a tissue-ingrowth-receptive, open-pore fabric, to assist in providing a joint function. There is also affixed to the bone-exposed face of the elastomer-covered reinforcing member a coating of such tissue-ingrowth-receptive, open-pore fabric. All the elements where attached are firmly fixed to each other, the reinforcing member being also suitably sutured to the elastomer-impregnated fabric. The fiber and fabric parts are advantageously of Dacron, the fabric being preferably of Dacron velour; and the elastomer is advantageously silicone rubber. The device is adapted for insertion as a load-bearing element. A method for making the above device is also provided.

3,683,423

GRAVITY ACTIVATED PROSTHETIC DEVICE

Russell S. Crapanzano, 4260 Winbourne Ave., Baton Rouge, La.

Filed Jan. 19, 1971, Ser. No. 107,791
Int. Cl. A61f 1/06
U.S. Cl. 3—1.1 **20 Claims**

A prosthetic device, especially for use as an artificial arm and hand. An electrical device operates grasping elements at the outer end of the prosthetic device. The flow of electrical current to the electrical device is in turn controlled by mercury switches which are positioned such that the position and orientation of the prosthetic device determines whether or not current is transmitted to the electrical device to operate the grasping elements.

3,683,424

SURGICALLY IMPLANTABLE COMPOUND BREAST PROSTHESIS

William J. Pangman, 865 Comstock Ave. W., Apt. 12A, Los Angeles, Calif.

Filed Jan. 30, 1970, Ser. No. 6,994
Int. Cl. A61f 1/00, 1/24; A41c 3/10
U.S. Cl. 3—36 **5 Claims**

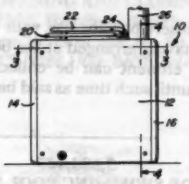
A compound prosthesis for surgical implantation is provided that has an elastic sack or envelope which is adapted to contain a foam core and a quantity of a liquid in the cells of the core. The envelope has a flexible tube for adding the liquid at the time of implantation so that the size of the implant can be adjusted as desired. The flexible tube can then be tied off and concealed in a pocket in the outer layer of foam or sponge material.

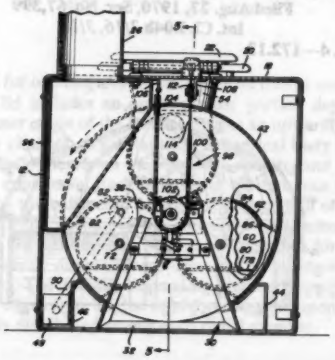
3,683,425

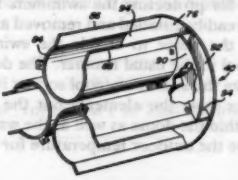
COMBUSTION TOILET

Leroy Patterson, P.O. Box 21026, Salt Lake City, Utah

Filed Oct. 7, 1970, Ser. No. 78,680
Int. Cl. A47k 11/02
U.S. Cl. 4—131 **9 Claims**







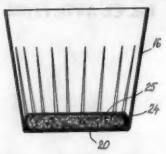
Excreta is deposited into a pivotally suspended receptacle through an aligned opening. The opening in the receptacle is covered upon angular advancement of a receptacle carrier to an incinerating position in response to closing of the cover lid on the toilet cabinet enclosing the carrier. Combustion products are conducted through an exhaust opening at one axial end of the receptacle to a flue extending upwardly from the cabinet. After incineration, the receptacle is advanced with the carrier to a cooling position.

3,683,426

DISPOSABLE BAG FOR USE WITH INCINERATOR-TYPE DRY CLOSETS

Goran Emil Lagstrom, Essingeringen 72 C, Stockholm, Sweden

Filed Sept. 29, 1970, Ser. No. 76,393
Claims priority, application Sweden, Sept. 30, 1969, 13439/69
Int. Cl. F23g 3/04
U.S. Cl. 4—142 5 Claims



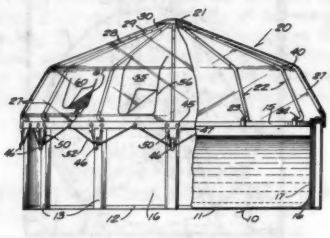
A disposable insert bag for use with incinerator-type dry closets, the bag having arranged at the bottom thereof means by which liquid effluent can be collected, distributed and retained therein until such time as said bag is disposed of as by burning.

3,683,427

OUTDOOR SWIMMING POOL WITH DOME

Herbert Carl Burkholz, W-280, N-1841, Hy SS, Pewaukee, Wis., and Norman K. Burkholz, N-87, W-15380 Kings Highway, Menomonee Falls, Wis.

Filed Aug. 27, 1970, Ser. No. 67,399
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.12 8 Claims



A dome formed of flexible sheet material supported by a suitable framework above an outdoor swimming pool to form an enclosure for protecting the swimmers from the weather. The dome is readily installed and removed and provides ample room above the water to enable the swimmers to use the swimming pool in the usual manner. The dome fully encloses the area above the swimming pool so that it not only protects the swimmers from the elements but the sun heats the atmosphere within the dome as well as the water an appreciable amount above the outdoor temperature for the comfort of the swimmers.

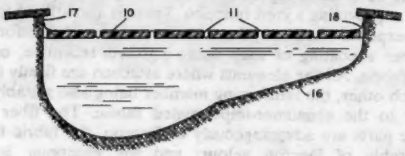
3,683,428

RIGID, BUOYANT, INSULATING AND RAPID FOLDING SWIMMING POOL COVERS

Lester Morris, 16954 Cotter Place, Encino, Calif.

Filed June 1, 1970, Ser. No. 41,797
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.14 10 Claims

Rigid, closed cell foam plastic sheets are joined by flexible hinges. A series of resulting strips are floated, side by side, to cover the pool. Overall dimensions are slightly smaller than the inner pool perimeter to allow for easy removal. There is attached to the outer perimeter and extending past the edge of the sheets and up the wall of the pool, a flexible lip, preferably porous, so that some pressure is exerted to keep individual sections together while sealing the open perimeter channel. This allows rain water passage to the pool below without permitting dirt to follow. Flexible or elastomeric inserts are attached at corners and at necessary breaks in the lip selected for folding or closer fitting to further keep out contamination. The alternately hinged, rigid foam sheets fold, accordion like, into a small space when not in use.

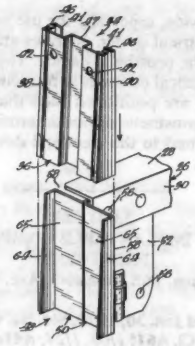


3,683,429

BED FRAME ASSEMBLY

Frank J. Mis, Oak Lawn, Ill., assignor to Harris-Hub Company, Inc.

Filed July 15, 1970, Ser. No. 54,994
Int. Cl. A47c 19/02
U.S. Cl. 5—201 10 Claims



A bed frame assembly of the knockdown type including a pair of spaced parallel L-shaped side frame members and at least one perpendicularly extending L-shaped cross frame member detachably secured to said side frame members. Slidably interengaging male and female elements are provided on the side and cross frame members for detachably securing them to one another, and the male and female members have a corresponding dual taper, so that they are wedged into interlocking engagement with one another by the reaction force of floor-engaging abutments carried on the cross frame member.

3,683,430

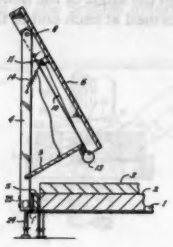
TILTABLE HEADBOARD FOR BEDS

William J. Bradley, P. O. Box 20203, Houston, Tex.

Filed Sept. 9, 1970, Ser. No. 70,842
Int. Cl. A47c 22/00, 19/00
U.S. Cl. 5—279 1 Claim

A tiltable headboard for beds being a headboard pivotally mounted on supporting means in cooperation with a bed

frame and having a pivotally mounted tilt support movable into locking position to maintain the head board in a tilted



position, said tilt support means for releasing same from tilt support position, and having means for adjusting the angle of tilt.

3,683,431

TIE FOR A PNEUMATIC MATTRESS

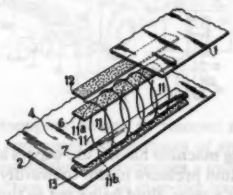
Gerard J. Pennel, Hem; Gonzague J. Prouvost, Tourcoing, and Robert P. Pruvost, Roubaix, all of France, assignors to Etablissements Pennel & Flipo, Roubaix, France

Filed June 1, 1970, Ser. No. 42,249

Claims priority, application France, June 5, 1970, 6918488

Int. Cl. A47c *27/08*

U.S. Cl. 5—350 **10 Claims**



An inflatable structure such as a mattress having ties interconnecting opposite walls of the structure. The ties comprise a thread wound around two bands in the form of coils of thread. The bands are secured to the respective two walls of the structure. A method and machine are described for producing the ties.

3,683,432

INTERNAL COMB SOFTENING MEANS FOR BEEHIVES

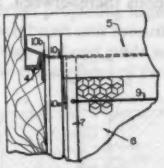
John Musgrove, 629 Lebanon St., Monroe, Ohio

Filed Oct. 22, 1970, Ser. No. 83,266

Int. Cl. A01k *47/00*

U.S. Cl. 6—2 **9 Claims**

A beehive construction wherein the comb foundation is provided with a low voltage heating element having contacts engageable by connectors mounted on the foundation supporting brood frame, the connectors on the brood frame seating on and making electrical contact with metallic frame supporting rabbets extending along the opposite ends of the hive body, the metallic rabbets being adapted to be connected to a source of low voltage electric current.



3,683,433

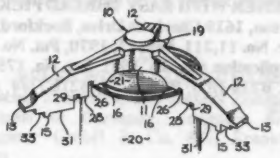
CONTAINER OPENING AND CLOSING DEVICE

Robert D. Massaro, 225 S. Hamilton, Beverly Hills, Calif.

Filed June 26, 1970, Ser. No. 50,120

Int. Cl. B25f *1/00*; B67b *7/44*

U.S. Cl. 7—14.6 **2 Claims**



A device for opening and removing the lid from a container, where the lid includes an outer annular portion depending from the outer edges of the lid that defines an upwardly opening annular channel. A substantially cylindrical body has extending radially therefrom members for opening and closing the subject containers. Each member at the terminus thereof has a portion to be disposed between the outer wall of the lid and the receiving portion of the container. The bottom portion of each leg has depended therefrom members for applying a downwardly directed force upon the outer edges of the container lid. The radially depending members apply equal force to the edge of the lid, the total force applied upon the lid being equally distributed among each radial member.

3,683,434

Patent Not Issued For This Number

3,683,435

Patent Not Issued For This Number

3,683,436

METHOD FOR MAKING A DRILL SCREW WITH AN EXTRUDED POINT

Bernard F. Reiland, Rockford, Ill., assignor to Textron Inc., Rockford, Ill.

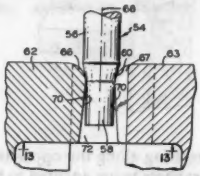
Filed Jan. 22, 1970, Ser. No. 4,940

Int. Cl. B21k *1/44*; B23g *9/00*

U.S. Cl. 10—10 R **6 Claims**

A method of making a drill point, self-thread-forming screw comprises cold forging the work-entering end of a screw blank between laterally movable complementary die members which completely enclose the blank end to achieve un-

restricted longitudinal extrusion of the complete cross section of the screw and at the same time controlled lateral expansion thereof. Offset jaws on the die members form a pair of flutes extending the length of the drill point on opposite sides thereof and land portions therebetween. Such land portions



are provided with a hook at the work-entering extremities of the forward faces thereof. Due to control of the lateral expansion of the blank end, no flashings are formed on the drill point, which requires only a sharpening operation for completion.

3,683,437

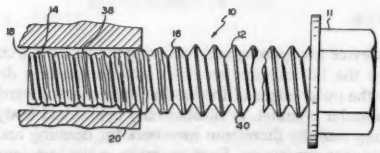
METHOD OF MAKING A SELF-THREAD FORMING FASTENER WITH EASY THREAD PICKUP

Eugene R. Larson, 1619 Charlotte Drive, Rockford, Ill.

Division of Ser. No. 11,211, Feb. 13, 1970, Pat. No. 3,633,455. This application Aug. 26, 1971, Ser. No. 175,149

Int. Cl. B21h *3/06;* **B23g** *7/00;* **B21k** *1/44, 1/56*

U.S. Cl. 10—10 **1 Claim**



The work-entering end of a self-thread forming fastener is provided with a step-tapered portion for initially engaging the sidewall of the pilot hole of a workpiece. The invention is characterized by the fact that the tapered portion is of substantially circular cross section while the radial height of the thread over such step-tapered portion increases from a beginning height less than the diameter of the pilot hole to the full height of the thread on the shank portion in stages. In the first such stage, the crest of the thread increases rapidly in radial height within a small circumferential angle to establish substantial initial thread-forming engagement with the pilot hole. In the second stage, the crest of the thread continues for at least one full thread turn at substantially the same radial height as it achieves in the first stage to insure thread pickup with minimum end loading. In the third stage, the crest of the thread increases in radial height substantially to the maximum radial height of the crest of the thread on the shank portion.

3,683,438

METHOD OF FORMING A PREFORMED GROOVE CUTTING FASTENER STRUCTURE

George A. Tinnerman, 3600 Stewart Ave., Miami, Fla.

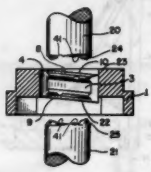
Continuation-in-part of Ser. No. 723,163, April 22, 1968, Pat. No. 3,545,331. This application Oct. 22, 1970, Ser. No. 83,021

Int. Cl. B21d *53/20, 53/24*

U.S. Cl. 10—86 F **10 Claims**

A fastener structure is formed by swaging groove cutting or self-tapping ribs or threads in the wall of an aperture, so the ribs will cut a groove or grooves in a stud rotated in the aperture. The walls surrounding the aperture are first deformed to provide helicoidal surfaces bordering the end of the aperture, and the wall is then swaged from the inclined edge to form a rib or thread from each surface of uniform height, or tapering in height according to the angle of the helicoidal surfaces.

The ribs may be formed at each end of the aperture, and the



ribs or threads may also be formed to lie on the same helical path, so that the fastener may cut a single groove on a smooth shank or may engage a threaded shank. A deflected portion on each rib provides frictional resistance to rotation of the fastener.

3,683,439

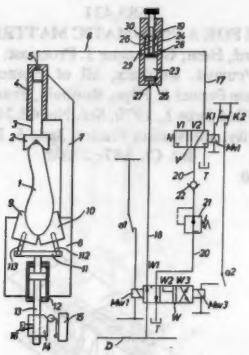
HEEL SUPPORT FOR A SHOE LASTING MACHINE

Anton Muhlbach, Montabaurer Str. 44, 623 Frankfurt am Main, and Rudi Fichtner, Untergasse 14, 6307 Ober, both of Germany

Filed May 6, 1971, Ser. No. 140,794

Int. Cl. A43d *21/00*

U.S. Cl. 12—14.4 **4 Claims**



A shoe lasting machine having toe wipers and a heel support movable by a fluid pressure motor toewardly into engagement with the heel of a shoe, fluid being fed to the motor through a chamber having a piston at one end, the piston being moved in the chamber a predetermined amount upon engagement of the wipers with the shoe to impart an additional toeward movement of the support.

3,683,440

AUTOMATIC TERMINAL BRIDGE CONTROL SYSTEM

James A. Xenakis, Roslyn Harbor; Alvin L. Zechnowitz, Mousey, and Raymond L. Strazzulla, Huntington Station, all of N.Y., assignors to Sperry Rand Corporation

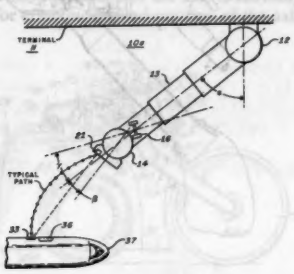
Filed Oct. 13, 1970, Ser. No. 80,425

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **11 Claims**

Apparatus for aligning one or more motorized terminal bridges to one or more doors in a vehicle enabling the loading and unloading of passengers and freight. The apparatus includes control circuits responsive to signals from a remotely located control panel which provides drive signals used in the

initial positioning of each bridge. An electro-optical device in each bridge is locked onto a reflective type material affixed to the vehicle in the vicinity of each door. Transducers mounted in various sections of the bridges determine the spatial position of the bridges with respect to the terminal after initial positioning. The transducers cooperate with the electrooptical device to produce drive signals that steer and control the speed of each bridge until pressure contacts on each bridge indicate precise alignment with each door.

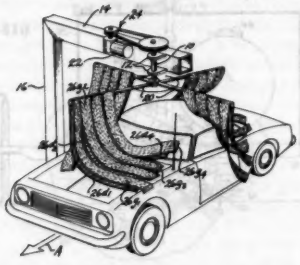


3,683,441

VEHICLE CLEANING DEVICE

Richard H. Fromme, 71467 Estellita Drive, Rancho Mirage, Calif.

Filed Jan. 13, 1970, Ser. No. 2,459
Int. Cl. B60s *3/06*
U.S. Cl. 15—97 **7 Claims**



This rotary mopping device to remove residual dirt and scum from top and upper side surfaces of an automobile in a machine-wash establishment comprises a multiarm rotor, with each arm supporting an array of mop-like strips hung at a succession of points along the length of the arm and graduated in length as a function of radial position along the arm. With the outermost strips being the longest and being so located in terms of radial distance from the upright rotation axis of the rotor as to lie beyond the sides of the widest automobile to be washed. Preferably in each array there are two strips of different length at each of the successive mounting points along the length of the arm, with the leading strips being the shorter of the two.

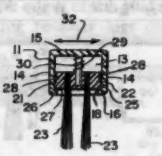
3,683,442

TOOTHBRUSH

James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation

Filed April 5, 1971, Ser. No. 131,246
Int. Cl. A46b *15/00*
U.S. Cl. 15—167 R **12 Claims**

A toothbrush and the like comprising a brush head elongated along its longitudinal axis and having longitudinal sides, a hollow interior and an elongated bottom opening, a plurality of individual brush units in the head each projecting a plurality of tufts through the opening but each being retractable into the hollow interior of the brush head when subjected to an external force and brush projecting urging means in the hollow head for urging each brush unit toward the opening to project the tufts therethrough and end guide means in the brush head snugly engaging the end surfaces of the brush units for guiding movement of the units individually inwardly of the head when subjected to an external force sufficient to overcome the urging means of the individual unit. The brush units are spaced apart at the sides to provide liquid flow paths communicating with the hollow interior of the brush head for cleaning purposes and each brush unit has two or more tufts aligned transversely to the longitudinal axis of the brush head.

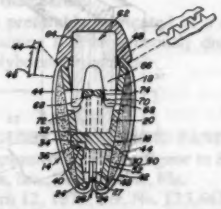


3,683,443

BRUSH WITH CLAMPED HANDLE

Kurt Krusche, Frankfurt, and Hubert Zimmermann, Mannheim, both of Germany, assignors to Allstar Verbrauchsguter GmbH & Co. KG, Frankfurt am Main, Germany

Filed May 14, 1970, Ser. No. 37,198
Int. Cl. A46b *3/08*
U.S. Cl. 15—177 **7 Claims**



A brush with handle is provided and comprises two identical half-shells, which may be easily assembled into a wedge-shaped brush body adapted to be snapped into a longitudinal handle. Each of the half-shells bears a plurality of bristles which are inclined relative to the carrier and which are generally parallel to one another. The resulting wedge-shaped brush with handle is thus adapted for use in tight quarters, such as between the fixed seats and backs of chairs, to pick up small particles of debris which may have lodged there.

3,683,444

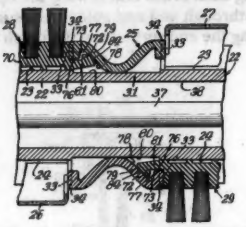
SUCTION CLEANER BRUSH ROLL ASSEMBLY

Harold W. Schaefer, Bloomington, and William H. Penn, Normal, both of Ill., assignors to National Union Electric Corporation, Stamford, Conn.

Filed March 29, 1971, Ser. No. 128,869
Int. Cl. A46b *13/02*
U.S. Cl. 15—183 **23 Claims**

A brush roll assembly for mounting in the air inlet passage of a suction cleaner is disclosed, wherein a pair of elongated brush strips are removably mounted in generally longitudinally extending grooves in the roll body. Each brush strip has a detent at one end thereof, which engages a retaining surface on the interior of a cavity in a drive pulley secured to the

roll body. The detent is carried on the end of a resilient arm, and the arm is inwardly deflectable to disengage the detent from the retaining surface so that the brush strip can be shifted



out of the groove. A multi-part construction is utilized in the drive pulley to facilitate assembly thereof on the roll body, and the roll body is helically shaped to reduce the effective profile area of the brush roll assembly.

3,683,445

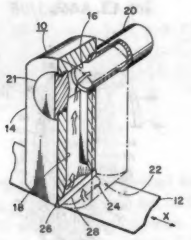
TAPE CLEANING DEVICE

Margery F. Hagadorn, Waltham, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed April 20, 1970, Ser. No. 29,936

Int. Cl. A47l 9/06

U.S. Cl. 15—308 **9 Claims**



Tape cleaning apparatus for use in a magnetic tape transport device having a tape cleaner head which is located in the path of the moving tape. The tape cleaner head is provided with a blade formed of substantially non-magnetic hard material and operates in combination with vacuum to remove foreign particles of material from the tape surface to prevent signal disturbance.

3,683,446

NOZZLE FOR ALTERNATIVE BLOWING OR SUCTION

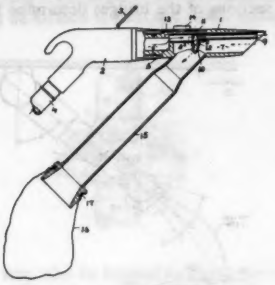
Peter Hans Tell, Saturnusvagen 56, Akersberga, Sweden

Filed Nov. 13, 1970, Ser. No. 89,368

Int. Cl. A47l 9/08

U.S. Cl. 15—330 **3 Claims**

A nozzle device for connection to a source of pressure air is intended for removing of accumulated particles either by blowing or suction. The nozzle at its muzzle has two passages which by a valve alternatively are connectable to said source. When the one of said passages is connected to said source of pressure air a blowing is obtained at said muzzle and when the other passage is connected to said source a suction is obtained at the muzzle of the nozzle. The valve has a magnetically in-



fluenced valve member and the nozzle carries in vicinity of the valve a magnet, preferably a permanent magnet, for regulating the valve.

3,683,447

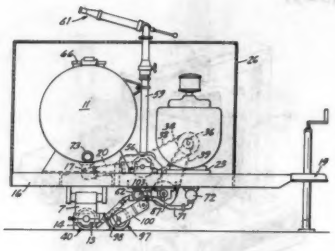
WATER REMOVING DEVICE

William W. Stevenson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 25, 1970, Ser. No. 49,670

Int. Cl. A47l 7/00

U.S. Cl. 15—352 **7 Claims**



A device for removing water from an artifically surfaced field comprises, in combination, a frame; at least one roller rotatably mounted in said frame and extending at least partially therebelow, said roller having a diameter of from about 2 to 20 inches and adapted to roll over said surfacing, there being sufficient weight exerted on said roller by the weight of the roller, the weight of the device, or preferably a combination thereof, so that said roller exerts at least 10 pounds per square inch pressure on said surface along the length dimension of said roller, said roller pressing said surface to express water therefrom to a position in front of said roller; suction means to remove said water from in front of said roller; and means on said frame to hold the water after it is removed.

3,683,448

NOZZLE HEIGHT ADJUSTING MECHANISM FOR A SUCTION CLEANER

Robert C. Lagerstrom, Anderson, S.C., and Willis E. Berry, Bloomington, Ill., assignors to National Union Electric Corporation, Stamford, Conn.

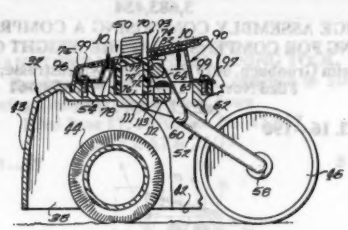
Filed June 3, 1970, Ser. No. 42,951

Int. Cl. A47l 5/34

U.S. Cl. 15—354 **9 Claims**

A nozzle height adjusting mechanism for adjusting the height of the suction inlet of an upright suction cleaner, with

respect to the surface being cleaned, which includes a rotatably mounted axle in the cleaner body adjacent the suction inlet and wheels on the radially offset outer ends of the axle. An adjusting member having a cam surface engaging a radially offset central portion of the axle is movably mounted on the body for effecting limited rotation of the axle about its



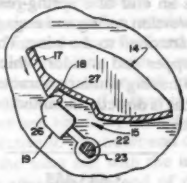
axis and consequently adjustment of the height of the suction inlet. The adjusting member is conveniently located on the upper front portion of the body for manipulation by a user. The height adjusting mechanism also includes indexing means which facilitates rapid movement of the adjusting member to and releasable retention thereof in a selected one of a plurality of its adjusted positions.

3,683,449

VACUUM CLEANER

Erwin E. Nordeen, Saint Paul, Mich., assignor to Whirlpool Corporation

Filed May 19, 1970, Ser. No. 38,806
Int. Cl. A47l 9/32
U.S. Cl. 15—410 **4 Claims**



A vacuum cleaner comprising a floor contacting cleaning unit including a member movable over a floor being cleaned and including a suction producing motor-fan unit, a handle movable on this unit between operating and storage positions, cooperating catch means on the unit and a catch on the handle that are in engagement when the handle is in its storage position to retain the handle in the storage position and means for releasing the engagement of the catch means and catch in moving the handle from storage to operating position in which at least one of the catch means and catch is yieldable to permit forcible disengagement by force applied to the cleaning unit and the handle structure with the result that the yieldable construction permits this forcible disengagement without damage to the vacuum cleaner parts involved.

3,683,450

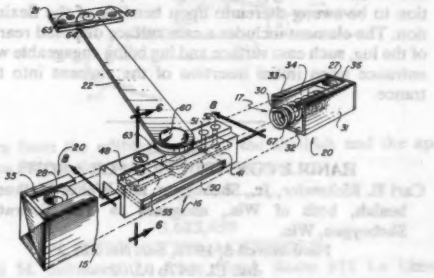
FRICTION DOOR HOLDER

Richard J. Morrison, Wilmette; Arthur A. Schlumpf, Chicago, and Albert J. Martino, West Dundee, all of Ill., assignors to Rixson Inc., Franklin Park, Ill.

Filed June 22, 1970, Ser. No. 48,090
Int. Cl. E05f 5/00
U.S. Cl. 16—49 **7 Claims**

A friction door holder having a door frame mounting bracket and a door supported channel formed with an elongated guide slot. The channel houses a self-lubricating friction assembly. A drive arm pivoted to the mounting bracket moves the friction assembly within the channel.

The friction assembly comprises a slide block which has a generally U-shaped elongated body formed with generally parallel elongated depending sides positioned closely adjacent the sides of the channel and joined together by a base section located adjacent the guide slot. The slide block body includes firstly an elongated guide head projecting from the base and sandwiched between the edges of the guide slot, and secondly a plurality of projecting retainer legs depending from the



corner extremities of the depending sides towards the channel bottom. A metal plate carrying a friction liner is housed within the slide block and is retained between the slide block legs; and an elongated cam spring is housed within the slide block with one end fixed to the slide block and the other end being free to move relative the slide block. An adjustment screw carried by the slide block contacts adjustably the free end of the cam spring to vary the degree of friction engagement between the friction liner and the channel.

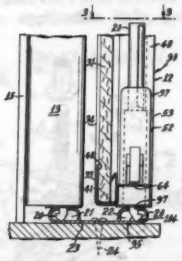
The slide block is preferably fabricated of a solid plastic, such as nylon, containing a homogeneously dispersed solid lubricant, such as molybdenum disulfide.

3,683,451

UNITARY GUIDE FOR SLIDING PANELS

Homer C. Tanner, Jacksonville, Fla., assignor to Southeastern Aluminum Products, Inc., Jacksonville, Fla.

Filed March 12, 1971, Ser. No. 123,661
Int. Cl. E05d 13/00
U.S. Cl. 16—90 **16 Claims**



A unitary guide including a guide body having a guide element extendable through the guideway entrance and a laterally extending lug engageable with the shoulder within an elongated guideway. The guide body includes a lateral portion bridgeable across the entrance and being of a lateral dimension to inhibit ingress through the entrance when the element is positioned through the entrance. A resilient flexing portion is connected to the lateral portion whereby the lateral portion may bend about a longitudinal axis generally parallel with the

guideway. The element and lug are insertable through the entrance by a pushing force thereon exerted perpendicularly to the guideway thereby bending the flexing portion. The element and lug are of a smaller lateral dimension with the flexing portion in a bent condition than the entrance to permit ingress of the element and lug therethrough and into the guideway. The element and lug are of a normal lateral dimension to inhibit egress thereof through the entrance after seating of the element and lug in the guideway by an outwardly pulling force thereon exerted perpendicularly to the guideway. The body has another lateral portion spaced from and above the first lateral portion and defining therebetween and with the flexing portion a space to permit first lateral portion to be swung thereinto upon bending of the flexing portion. The element includes a cam surface disposed rearwardly of the lug, such cam surface and lug being engageable with the entrance upon initial insertion of the element into the entrance.

3,683,452

HANDLE CONSTRUCTION FOR A BOWL

Carl H. Rickmeier, Jr., Sheboygan, and Walter Platkus, Glenbeulah, both of Wis., assignors to The Vollrath Co., Sheboygan, Wis.

Filed March 5, 1971, Ser. No. 121,296
Int. Cl. A47b 95/02
U.S. Cl. 16—126 **10 Claims**

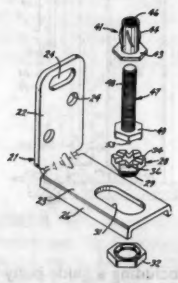
A kitchen bowl has a large ring pivotally connected to a side thereof for swinging movement from a loosely suspended position to a raised, horizontal position where ball locks on the ring snap into readily releasable position beneath an annular flange on the bowl to convert the ring into a rigid handle.

3,683,453

HINGE STRUCTURE FOR A CLOSURE MEMBER

Don H. McLeland, and Billy G. Harris, both of Fort Worth, Tex., assignors to Overhead Door Corporation, Dallas, Tex.

Filed Jan. 25, 1971, Ser. No. 109,238
Int. Cl. E05d 7/04
U.S. Cl. 16—129 **2 Claims**



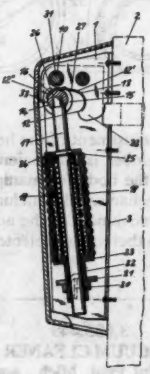
A hinge structure for adjustably and pivotally supporting a door upon a door frame, said hinge structure including a support bracket means mounted on the frame and pivot pin means mounted on the door for engagement with said bracket means. The engaging surfaces of the pivot pin means and bracket means have cooperating structure for yieldably resisting pivotal movement between the pivot pin means and the bracket means. The pivot pin means is threadedly mounted in a sleeve which is secured within the edge of the door so that pivotal movement of the door is effected by rotational movement between the pin means and the sleeve means.

3,683,454

HINGE ASSEMBLY COMPRISING A COMPRESSION SPRING FOR COMPENSATING THE WEIGHT OF WINGS

Wilhelm Gronbach, 8019 Ebersberg, Alpenstrasse, Germany

Filed Nov. 20, 1969, Ser. No. 878,461
Int. Cl. E05f 1/12
U.S. Cl. 16—190 **12 Claims**



The hinge assembly is intended for use with wings which are hinged on a horizontal axis, such as lids, flaps or the like, particularly in freezers. The compression spring bears at one end on the stationary hinge member under initial stress and at its other end engages an end of a spring-restraining rod, which supports the compression spring and engages the second hinge member, which is attached to the wing. The spring-restraining rod carries at its upper end a slider, which consists of polyamide or a material having similar characteristics and which is guided by a cam that is directly mounted in that hinge member attached to the wing.

3,683,455

HIDE REMOVAL APPARATUS AND METHOD

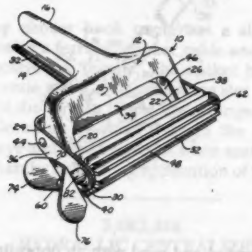
James D. Anderson, P.O. Box 425, Richton Park, Ill.

Division of Ser. No. 710,198, March 4, 1968, Pat. No. 3,545,037. This application Dec. 4, 1970, Ser. No. 95,359
Int. Cl. A22b 5/16
U.S. Cl. 17—50 **2 Claims**

An apparatus and method for removing the hide from suspended livestock carcasses. A portion of the hide which has

been previously removed from the carcass is secured by clamping means, and a separating member is passed between the hide and the suspended carcass to separate further portions of the hide from the carcass.

3,683,456
HAND OPERATED FISH SKINNING TOOL
Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed June 17, 1970, Ser. No. 47,047
Int. Cl. A22c *25/17*
U.S. Cl. 17—67 **5 Claims**

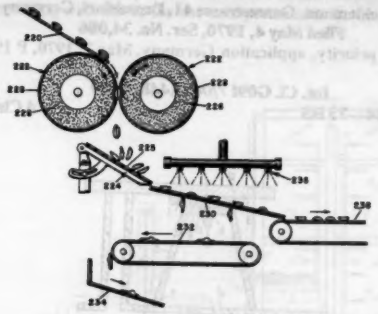


A hand operated fish skinning tool of the pliers type comprising first and second lever members pivoted together and having cooperating handle portions. The first lever member includes a pair of spaced apart arms having a bolt member rotatably extending therebetween. A toothed roller is mounted on the bolt member for rotation therewith between the arms. A wing nut embraces the head of the bolt member outwardly of one of the arms with a nut being threadedly mounted on the other end of the bolt member outwardly of the other arm. First and second collars embrace opposite ends of the bolt member and rotatably extend through the first and second arms respectively. The outer end of the first collar frictionally engages the wing nut with the inner end of the first collar frictionally engaging one end of the roller. The inner end of the second collar frictionally engages the other end of the roller with the outer end of the collar frictionally engaging the nut. The second lever member has a curved pressure surface formed thereon which is adapted to engage and partially extend around the roller when the lever members are pivoted together.

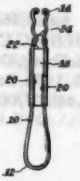
3,583,457
Patent Not Issued For This Number

3,683,458
APPARATUS FOR SHUCKING SHELLFISH
Richard T. Wenstrom, Hampton, and Thomas S. Gorton, Jr., Cambridge, both of Mass., assignors to Slade Gorton & Co., Inc., Boston, Mass.
Division of Ser. No. 659,274, July 17, 1967, Pat. No. 3,528,124. This application Sept. 10, 1970, Ser. No. 71,119
Int. Cl. A22c *29/00*
U.S. Cl. 17—74 **5 Claims**

A method and apparatus for shucking raw uncooked unfrozen shellfish of the bivalve type which includes the method of opening the shells by shocking the shellfish, cleaning the viscera from the edible muscle of the shellfish and the apparatus for opening and cleaning the same.

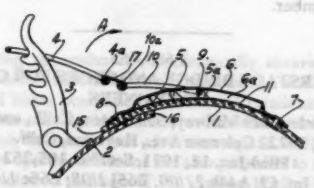


3,683,459
SHIRT BUTTON ACCESSORY
Alfred M. Johansen, La Lima Hotel, Room 911 La Lima Nueva, Cortes, Honduras
Filed Nov. 12, 1970, Ser. No. 88,692
Int. Cl. A41f *1/02*; A44b *21/00*
U.S. Cl. 24—40 **2 Claims**



Button grasping means can be manually clamped onto a button and then drawn through a button hole prior to release of the button whereby the button is properly disposed in the button hole.

3,683,460
TENSIONING LEVER LOCK ON SKI BOOTS
Loris Baso, Corso Milano 19, Padua, Italy
Filed Jan. 18, 1971, Ser. No. 107,340
Claims priority, application Italy, July 31, 1970, 41607 A/70
Int. Cl. A43c *11/14*
U.S. Cl. 24—70 SK **5 Claims**



A clamping device for a ski boot is provided wherein the clamping device utilizes a loop connected to one side of the boot and received into a selected one of a plurality of suitably oriented slots in a fitting connected to the other side of the boot. The fitting is arranged in cooperation with resilient means which tend to close the slots and thereby hold the loop normally therein but which will yield sufficiently to enable the loop to be shifted from one slot to another.

3,683,461
CONNECTOR FOR FIXING HOLLOW BODIES TO SUPPORTS

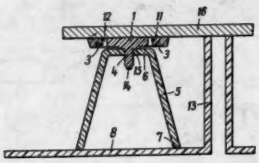
Rudolf Weidemann, Gansestrasse 41, Dusseldorf, Germany

Filed May 4, 1970, Ser. No. 34,086

Claims priority, application Germany, May 7, 1970. P 19 23 298.5

Int. Cl. G09f 7/06; A44b 21/00

U.S. Cl. 24—73 HS **4 Claims**



Hollow bodies having a predetermined profile in a projection on a plane are fixed to supports having adherable surfaces by means of connectors having adherable surfaces and consisting of two-part snap fasteners having mating male and female elements. Adhesive forces are produced between adherable surfaces of said connectors on the one hand, and of said support and said hollow bodies, on the other hand, whereby said connectors are adhesively joined to said support and hollow bodies. Snap fastener joints are formed between said male and female elements.

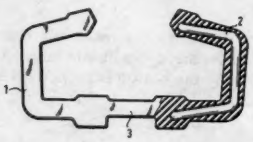
3,683,462
HOLDING CLIPS

Gunter Voigt, D-7141 Hochberg, Germany

Filed Dec. 28, 1970, Ser. No. 101,796

Int. Cl. A44b 21/00; A45f 3/00

U.S. Cl. 24—81 SK **11 Claims**



A holding clip made of resilient material has bent end portions for engaging and retaining an article. The bent end portions are stiffened relative to the body of the clip by stiffening members which are substantially similarly bent. The thickness of resilient material inwardly of the stiffening member is greater, at least over part of the bent end portion, than at a position opposite the said part on the outward side of the stiffening member.

3,683,463
INTERSTACK BRIDGE AND SHORE FOR CARGO CONTAINERS

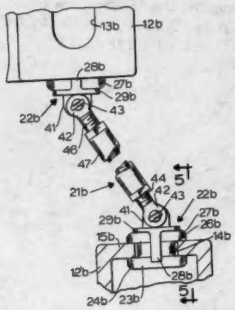
Paul E. Siefer, 449 Midway, San Mateo, Calif., and Claudis R. Bryant, 26222 Coleman Ave., Hayward, Calif.

Filed Jan. 11, 1971, Ser. No. 105,252

Int. Cl. A44b 21/00; B65j 1/08; B66c 1/42

U.S. Cl. 24—81 E **8 Claims**

Cargo containers used on shipboard and also for rail and truck transport are provided at each of eight corners with hollow corner blocks each having a vertical opening (either top or bottom, depending on location of the block at top or bottom) and two outward-facing side openings. Each side opening is oval, having a horizontal minor and a vertical major dimension. The shore at at least one end has a fitting formed of an oval inner member which is dimensioned to fit into a side opening, an outer member which is at least as large as the inner member and a connector between these members having a diameter less than the minor dimension, and a length equal to the wall thickness of the block. Thus, the inner member may be inserted through the side opening so that the connector is in the opening. When the fitting is turned 90°, the fitting is affixed to the block. A tongue may be associated with the fitting to extend through the side hole and prevent the fitting from twisting and working out of place. The fitting may



be internally threaded and used with an oppositely threaded, similarly shaped fitting which engages the block of an adjacent container. A double-ended, oppositely threaded screw is threaded into both fittings and may be tightened to hold the containers in position. Alternatively, each fitting may be connected by a swivel to a turnbuckle which is attached at its opposite end to a fitting, an arrangement useful when the containers are somewhat out of alignment. A pear-shaped ring may also be formed on the fitting to receive the eye of a cable lashed to a deck or other support.

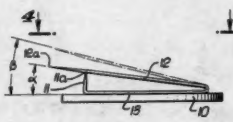
3,683,464
TWO PIN POINT CLIP

Maurice C. Giberson, 34888 County Line Road, Yucaipa, Calif.

Filed Oct. 16, 1970, Ser. No. 81,204

Int. Cl. A44b 1/18

U.S. Cl. 24—103 **5 Claims**



A two pin point clip unit comprises

a. a laterally extending element to be clipped to clothing,

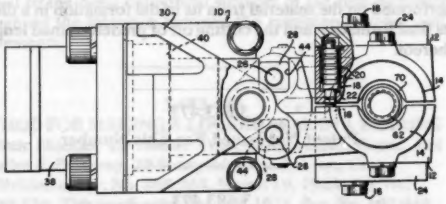
b. a relatively short pin-prong carried by and projecting rearwardly of and away from said element, and

c. a relatively long pin prong carried by said element and projecting rearwardly and also laterally thereof proximally past the tip of the relatively short prong, the long prong being yieldably deflectible for lateral insertion into clothing prior to frontal insertion of the short prong into the clothing to thereafter block lateral withdrawal of the long prong from the clothing.

3,683,465
TWO-WAY CHOKER HOOK
Kenneth L. Wernsing, 1931 N.E. 72nd Ave., Portland, Oreg.
Filed July 22, 1970, Ser. No. 64,851
Int. Cl. A44b *11/00*
U.S. Cl. 24—123 A 1 Claim

A two-way choker hook comprises a slip sleeve dimensioned to receive a ferruled choker cable and a socket dimensioned to receive the ferrule. The socket has an eye which passes the ferrule and a communicating slot which passes the cable, but not the ferrule. These are arranged to permit entry of the ferrule either endwise through the eye, or sidewise through the eye and associated slot when seating the ferrule in the socket, thereby facilitating application of the hook.

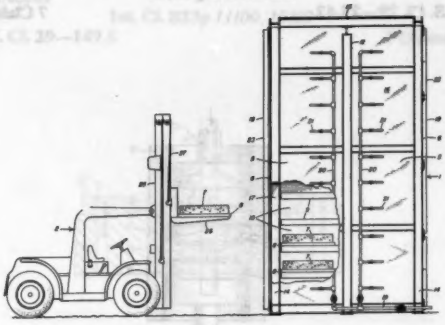
3,683,466
HYDRAULIC CENTRALIZER
Robert W. Hughes, Easton, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,200
Int. Cl. E21b *33/03*
U.S. Cl. 24—249 DP 17 Claims



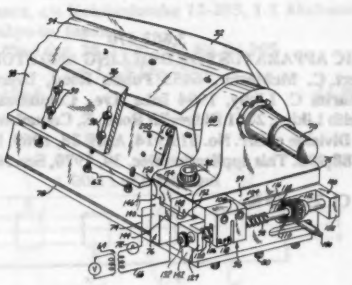
The centralizer comprises a pair of mutually engaging arms, movable by a hydraulic-fluid powered piston rod, for closure about a drill rod. The arms have resiliently loaded, extending pins therein which engage to inhibit an abutting closure of the arms upon each other, when powered by a first hydraulic supply. When powered by a second hydraulic supply, the pins are caused to retract into the arms, and the arms do close to an almost abutting disposition. In this latter operation, the arms grip and restrain a drill rod coupling disposed therebetween to facilitate a coupling (or uncoupling) of a drill rod therewith (or therefrom).

3,683,467
STORAGE SYSTEM FOR MOLDED ARTICLES
Charles J. Heltzman, 1260 Laukahi St., Honolulu, Hawaii
Filed March 25, 1970, Ser. No. 22,509
Int. Cl. F27b *1/08*
U.S. Cl. 25—133 8 Claims

A storage system having for stored molded articles during curing a storage unit containing in opposite sides a pair of back-to-back compartments each presenting for holding a stack of molded articles on pallets in vertically spaced relation a plurality of vertically spaced rows of laterally spaced support arms. Each compartment is loadable and unloadable through the adjoining side of the unit without disturbing molded articles in the other compartment and, for steam curing, the unit is enclosed, with doors for the compartments. Each compartment is loadable and unloadable in any desired sequence by a forklift truck and a lifting device is provided on a run-out table of an associated molding machine for lifting an article on its pallet from the table so that it can be picked up by the truck.



3,683,468
SHEARING APPARATUS
Aaron M. Kaufman, Rosedale, N.Y., assignor to Reliable Machine Works, Inc., Brooklyn, N.Y.
Filed May 26, 1970, Ser. No. 40,609
Int. Cl. D06c *13/00*
U.S. Cl. 26—15 R 11 Claims



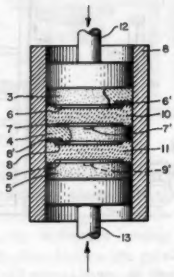
A shearing apparatus for automatically shearing natural and/or synthetic fibrous material comprises a rotating blade and a fixed blade positioned in a cutting relationship with a minimal clearance space therebetween. Means are provided to accurately measure that clearance space while the apparatus is in operation. Means are also provided to accurately adjust the relative position of the cutting blades during the operation of the apparatus thereby to reduce the clearance space to a desired amount. A guide means which includes adjustment mechanisms for accurately positioning a guide table in two planes relative to the cutting blades is positioned adjacent the cutting blades and is effective to direct the material fibers at a suitable angle into the shearing zone between cutting blades. An exhaust system is positioned adjacent the rotating blade and efficiently removes the sheared segment of the fibers from the shearing zone.

3,683,469

METHOD OF FABRICATING MULTILAYER CERAMIC CAPACITORS

Raymond G. Capek, Elmhurst, and Frank T. Takahashi, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 14, 1970, Ser. No. 63,811
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 7 Claims



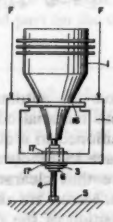
A method of fabricating a multilayer capacitor comprising alternate layers of ceramic dielectric material and metal electrodes. Preformed unfired ceramic dielectric pills having major surfaces coated with metal electrodes of lesser area than the coated surfaces are stacked with alternate layers of unfired ceramic dielectric powder fill. The stack is subjected to pressure to form a unitary compacted and pre-electroded multilayer element of unfired ceramic dielectric material, and the multilayer element is then fired to ceramic maturity.

3,683,470

SONIC APPARATUS FOR DRILLING AND STUB SETTING

Robert C. McMaster, 6453 Publiu Road, Delaware, Ohio; Charles C. Libby, 1994 Iuka Ave., Columbus, Ohio, and Keith Likins, 2061 Ridgecliff Road, E, Columbus, Ohio

Division of Ser. No. 819,914, April 28, 1969, Pat. No. 3,588,996. This application Dec. 30, 1970, Ser. No. 102,609
Int. Cl. B23p 11/00
U.S. Cl. 29—33 K 16 Claims



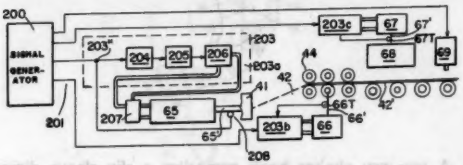
This invention is a method and apparatus for facilitating the driving and anchoring of a tool, bolt, or fastening device in a refractory material or other material with the result that the tool, bolt or fastening device is firmly fastened in the material. Reference is made to the claims for a legal definition of the invention.

3,683,471

CONTINUOUS MANUFACTURING PROCESSES AND APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 501,174, Oct. 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 393,292, Aug. 31, 1964, Pat. No. 3,594,254, which is a continuation-in-part of Ser. No. 734,686, June 5, 1968. This application March 27, 1969, Ser. No. 811,172
Int. Cl. B21c 31/00
U.S. Cl. 29—33 C 12 Claims



An apparatus and method are provided for continuously performing shaping and forming operation on material, such as metal or other suitable materials which may be formed continuously to a first shape through a die. After the initial forming operation, the apparatus performs one or more predetermined further forming and shaping operations on the initial shape such as continuously receiving and rolling same to reduce or change its cross section and, in so doing, to improve its physical characteristics. In a particular form of the invention, metal is first formed by extrusion to a first shape and thereafter is continuously roll formed to provide a sheet thereof. The sheet is then continuously fed to a shaping means, such as a rolling mill for forming same into a tube or pipe and the lateral edges thereof are welded or otherwise joined together.

The invention is also defined by an automatic control system for continuously controlling the multiple operations performed on the material from its initial formation in a die to its final formation and the cutting off of predetermined lengths thereof.

3,683,472

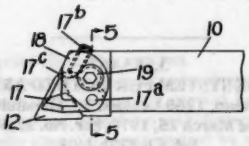
Patent Not Issued For This Number

3,683,473

TOOLHOLDERS WITH DETACHABLE CUTTING INSERTS

Sidney Edmund Joynson, Garforth, Leeds, England, assignor to Wickman Wimet Limited, Tile Hill, Coventry, Warwickshire, England

Filed Feb. 25, 1970, Ser. No. 14,168
Claims priority, application Great Britain, March 4, 1969, 11,344/69
Int. Cl. B26d 1/00
U.S. Cl. 29—96 4 Claims



A toolholder for clamping a symmetrical cutting insert comprising a recessed shank for reception of the insert, a chip breaker engaging one face of the insert a top clamp engaging the chip breaker, and the chip breaker being pivotally

mounted about an axis spaced from the insert and the clamp being movable between a clamping position and a releasing position in which the chip breaker can be pivoted to permit removal of the insert.

3,683,474

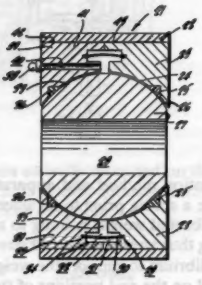
METHOD FOR FABRICATING A SELF-ALIGNING BEARING

Roy W. Young, Jr., 4749 Rosebank Drive, La Canada, Calif.

Division of Ser. No. 654,295, June 13, 1967, Pat. No. 3,506,315, which is a continuation-in-part of Ser. No. 599,241, June 21, 1966, abandoned. This application March 23, 1970, Ser. No. 24,929

Int. Cl. B23p *11/00*; B21d *53/10*

U.S. Cl. 29—149.5 B 11 Claims



A self-aligning bearing is assembled by placing two race elements having spherically curved, concave race surfaces over the complementary spherical bearing surface of a bearing member with the races in bearing relationship with the bearing surface of the bearing member. A retaining member is then bonded to the outer cylindrical surfaces of the race elements throughout the interface between the retaining member and the elements.

3,683,475

METHOD FOR MAKING A LOCKED SEAL IN A BEARING

Vladimir Mackas, 15 Timber Trail, Wethersfield, Conn., and Walter S. Pomeroy, 20 Sunnyridge Road, Avon, Conn.

Division of Ser. No. 808,554, March 19, 1969, Pat. No. 3,630,530. This application Jan. 19, 1971, Ser. No. 107,648

Int. Cl. B23p *11/00*, *19/00*

U.S. Cl. 29—148.4 S 10 Claims

The invention contemplates the anti-rotational locked assembly of a bearing seal ring to one of the rotational elements of a rotary bearing. The rotary bearing element may be a race ring having a circumferentially extending radially open groove for accommodation of a deformable seal member, upon assembly thereto. One or more locking projections displaced out of the body of the bearing element enter the nominal inner volume of the groove, so that upon assembly, the deformable seal material develops the desired locked relation of parts.

3,683,476

MANUFACTURE OF AIR BEARING ASSEMBLIES

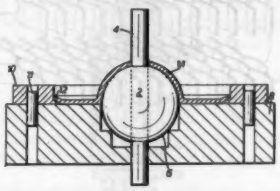
Michael C. Lea, Fareham, and Ronald J. Wray, Gosport, both of England, assignors to The Plessey Company Limited, Essex, England

Filed Aug. 4, 1970, Ser. No. 60,845

Claims priority, application Great Britain, Aug. 7, 1969, 39,503/69

Int. Cl. B23p *11/00*, *19/00*

U.S. Cl. 29—149.5 7 Claims



An air bearing is manufactured by coating a member (having the same dimension as the inner bearing member) with an electroless nickel coat. The thickness of the coat is made to equal the final clearance required between the inner and outer bearing members. The coat is then passivated and a layer of metal deposited on one half and, subsequently, on the other half of the coated member. The coated member is then removed from between the two halves of the metal layer which halves are then joined together to form the outer bearing member.

3,683,477

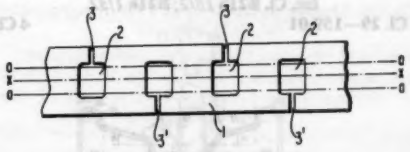
METHOD OF PRODUCING ONE-PIECE CHANNEL SHAPED PISTON RING

Eisuke Sugahara, c/o Kobdanjutaku 12-203, 1-1 Akabanedai, Kita-ku, Tokyo-to, Japan

Filed Oct. 28, 1970, Ser. No. 84,705

Int. Cl. B23p *15/06*

U.S. Cl. 29—156.6 2 Claims



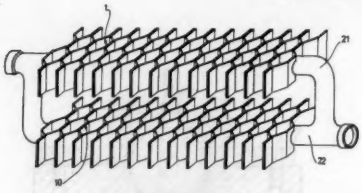
This disclosure provides a novel method of producing a channel shaped piston ring in that a plurality of relatively wide lateral slits are formed by punching together with the oil windows to save time and cost and also to avoid an "end effect" during the electrolytic Cr or Co-W plating treatment of the edge of the ring. The method is carried out by punching a sheet tape to produce the plurality of slits and windows, bending the punched tape into a channel having a C-shaped cross section, curling the C-shaped channel into a ring of larger diameter than the final piston ring, and heat treating the ring after inserting it into a hollow cylinder having an inner diameter slightly smaller than the initial diameter of the curled article. The method is further characterized in that the Cr or Co-W plating of the edges of the ring is carried out either before or after the heat treatment.

3,683,478

METHOD FOR PRODUCING A HEAT EXCHANGER

Michael Glay, 140, Avenue du General Leclerc, 95–Franconville, France

Filed Jan. 11, 1971, Ser. No. 105,513
Int. Cl. B23p *15/26*
U.S. Cl. 29—157.3 B 7 Claims



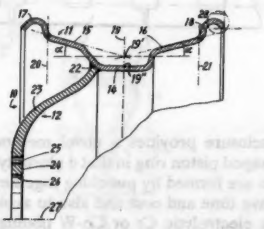
Heat exchanger formed of a block of plurality of glued metal strips which unroll into prismatic honeycomb cells in which an opening is drilled through the block perpendicular to the cell walls, and having a diameter less than the cross-sectional diameter of the tubular member adapted to be inserted therethrough, unrolling the block to open the cells and then cutting radial slits extending from the opening through a portion of the wall adjacent the opening and finally inserting the tubular member through the aligned openings of the cell to form a rigid heat exchange cell which can be used as a space heater, radiator, heat exchanger for refrigerators, or which may be assembled in one or more units in an enclosure for heat exchange between two circulating fluids, one through the tubes and the other through the enclosure.

3,683,479

METHOD OF MAKING WHEELS FOR HEAVY VEHICLES

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, vaison Sociale Michelin a Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Nov. 13, 1970, Ser. No. 89,281
Claims priority, application France, Nov. 15, 1969, 6939405
Int. Cl. B21h *1/02*; B21k *1/32*
U.S. Cl. 29—159.01 4 Claims



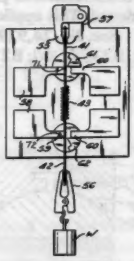
A wheel for heavy vehicles has a rim formed with a well base and a conical bead seat on either side of the well base. A disc is assembled with the rim in such a manner that a reference plane and a reference bore physically formed on the rim are respectively parallel to and coaxial with the middle circle of the rim–defined as the intersection of the rim and the plane of intersection of the conical surfaces of the bead seats.

3,683,480

METHOD AND APPARATUS FOR CALIBRATING A SPRING

Andrew F. Deming, 12660 Beech St. N.E., Alliance, Ohio

Division of Ser. No. 803,159, Feb. 28, 1969, Pat. No. 3,559,477, which is a division of Ser. No. 607,211, Jan. 4, 1967, abandoned. This application June 22, 1970, Ser. No. 48,259
Int. Cl. B21f *35/00*; B23p *13/00*
U.S. Cl. 29—173 27 Claims



A spring calibration method and apparatus is disclosed to precisely calibrate a spring prior to its assembly into the end-use device. A calibrated weight is hung to act by gravity on a coil tension spring thus stretching it and stressing it to a condition of static equilibrium to support the weight. Two reference points are marked on the end portions of the spring and vices may be used for this purpose to mark the locations of these first and second reference points and also these vices may be used to bend permanent hooks on the end portions so that the spring may be mounted in the end-use device by these hooks. The vices are a precise gauge distance apart so that when the spring is subsequently stressed to have these hooks again spaced apart this predetermined distance, then it will be known that the spring is developing this predetermined force. An example is that the spring may be assembled into a speed control governor by means of the hooks and the governor will thus be precisely calibrated. This establishes a predetermined force on the governor movable contact to thus establish a predetermined speed of operation of the governor without necessity for adjusting or calibrating anything in the governor after assembly and without necessity for running the governor to adjust the speed of operation. Also successive governors will be operable at a predetermined speed within close limits despite variations in springs in successive governors. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,683,481

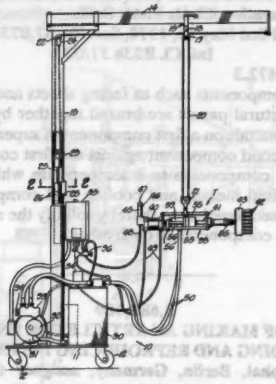
APPARATUS FOR EXPANDING TUBES

Marvin J. Blackburn, Pasadena, and Harry L. Corwin, Los Angeles, both of Calif., assignors to Vernon Tool Co., Ltd., Alhambra, Calif.

Division of Ser. No. 803,375, Feb. 28, 1969, Pat. No. 3,628,227. This application March 10, 1971, Ser. No. 122,836
Int. Cl. B23p *15/26*, *19/04*
U.S. Cl. 29—202 D 21 Claims

A tube expander apparatus and method for expanding heat exchange tubing into pressure assembly with a header bore. Expanding power is supplied by hydraulically powered motive means supplied with pressurized fluid from electrically driven pump means. Torque sensing means is employed to arm the automatic cycling of the expanding operation and to condition the apparatus for restoration to starting position at the end of

the tube-expanding cycle. The expansion cycle can be held in dwell condition at any stage at the user's option for any pur-



pose. Gripper means swivelly mounted on the expander is effective to hold the tube against rotation during initial stages of the cycle should this be desirable.

3,683,482

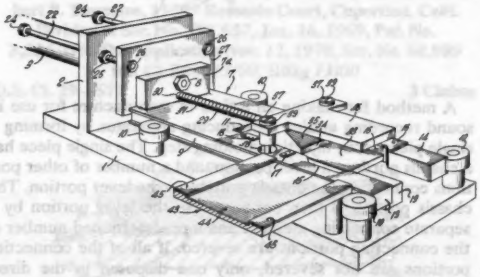
CLOSURE FLANGE FEED APPARATUS

Alan Glucbowski, Sewaren, N.J., assignor to American Flange & Manufacturing Co., Inc., New York, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,409

Int. Cl. B23p *19/04*; B23q *7/10*

U.S. Cl. 29—208 B **6 Claims**



A flange feed apparatus for feeding closure flanges into a metal working die which inserts flanges in container walls. A piston driven reciprocating pusher member receives and conveys an oriented flange into a flange insertion die. At the advanced position of the pusher member the flange is automatically urged downwardly into work receiving position within the die.

3,683,483

APPARATUS FOR AUTOMATICALLY ATTACHING A SLEEVE TO A CYLINDRICAL MEMBER

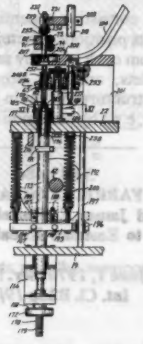
Walter G. Klettke, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 759,875, Sept. 16, 1968, Pat. No. 3,564,806. This application Jan. 18, 1971, Ser. No. 107,129

Int. Cl. B23p *19/04*; B65b *3/10, 31/00*

U.S. Cl. 29—208 B **8 Claims**

An apparatus for automatically attaching a malleable cylindrical sleeve or hub to a cylindrical member, such as the neck on a syringe barrel. The syringe barrel is rotatably supported in an upright position axially aligned with and above a hub support which is rotatably mounted upon the frame of the apparatus in axial alignment with the syringe neck. The hub is simultaneously rotated and moved upwardly into engagement



with the neck of the syringe barrel, which thereafter rotates with the hub. Deforming rolls engage the upper edge of the hub and rotate with it as they spin the hub onto the hub receiving neck of the syringe barrel. The assembled barrel and hub are then carried away from the apparatus.

3,683,484

METHOD OF MAKING A WOOD ENCASED WRITING INSTRUMENT

Edward J. Kolster, Lexington, Mo., and George O. Ira, Prairie Village, Kans., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed April 29, 1970, Ser. No. 32,920

Int. Cl. B23p *17/00*

U.S. Cl. 29—416 **6 Claims**

A writing instrument having a cap portion and a barrel portion receiving the operating mechanism and being coupled together when the instrument is in use, each of the portions being provided with a casing of real wood exteriorly thereof, the casing presenting the outermost surface area of the writing instrument. The method for forming the wood-encased writing instrument includes the steps of preparing an initially monolithic strip of real wood, forming the strip into a pair of sections, each corresponding in size to one of the portions of the writing instrument, forming a bore longitudinally of each of the sections and placing the respective portions in their corresponding bores whereupon the portions may be coupled together to present the finished instrument.

3,683,485

METHOD OF FABRICATING A STEEL-FILAMENT REINFORCED METAL COMPOSITE

Royce G. Schierding, 504 San Juan, St. Charles, Mo., and Tommy L. Tolbert, 339 Trail Ridge Drive, Rt. 4, Chesterfield, Mo.

Filed Jan. 2, 1970, Ser. No. 405
Int. Cl. B23p 17/00
U.S. Cl. 29—419 3 Claims

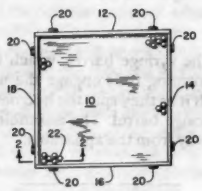
Moldable pellets consisting essentially of a metal matrix having steel filaments positioned therein substantially in parallel and separated from each other by said metal; the method of producing the pellets, and the process of manufacturing shaped composite structures wherein said pellets are molded to the desired shape, e.g., by extrusion or transfer molding.

3,683,486

METHOD OF FABRICATING A CASTING MOLD

Barry S. Rope, and James E. Huffaker, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,107
Int. Cl. B23p 19/00
U.S. Cl. 29—428 4 Claims



A method of fabricating a casting mold having an intricate pattern from a simple master precision mold is disclosed. A small master male mold is first fabricated. The master male mold is used for making a master female or intermediate mold of a flexible material. From the intermediate mold, a number of small male sections of a flexible material which may be the same as the intermediate mold may be pieced together to form a larger mold from which a product may be fabricated.

3,683,487

A METHOD OF MAKING AN INFLATED PRODUCT WITH A BEND

Frederick L. Sherman, 34 Forest St., Attleboro, Mass.

Continuation of Ser. No. 761,243, Sept. 20, 1968, abandoned. This application March 24, 1971, Ser. No. 127,806
Int. Cl. B23k 1/20
U.S. Cl. 29—470.9 6 Claims

Tube-in sheet material in which the tube is corrugated for enabling forming the material, as by bending, without collapse of the tube, and a method of making such material by inflation of a portion of composite sheet metal stock in dies having a corrugated tube-forming cavity.

3,683,488

METHODS OF BONDING METALS TOGETHER

Billy G. Cook, Booneville, Ark.; Barry Pollard, Pittsburgh, Pa., and Romulo M. Martinez, Chula Vista, Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed May 15, 1970, Ser. No. 37,873
Int. Cl. B23k 31/02
U.S. Cl. 29—472.3 4 Claims

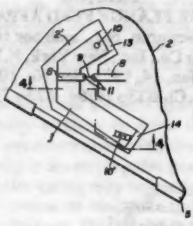
Metallic components such as facing sheets and honeycomb cores of structural panels are brazed together by electroplating different metals on a first component in superposed layers, pressing a second component against the first component and heating both components to a temperature which melts the electrodeposited metals, and cooling said components while they are pressed together to thereby solidify the melted metals and bond the components to each other.

3,683,489

METHOD OF MAKING AN ARTICLE FOR USE IN SOUND RECORDING AND REPRODUCING INSTRUMENTS

Klaus Westphal, Berlin, Germany, assignor to Telefunken Patentyerwerlungsesellschaft m.b.H., Ulm/Daube, Germany

Division of Ser. No. 701,948, Jan. 31, 1968, abandoned. This application April 29, 1970, Ser. No. 43,640
Claims priority, application Germany, May 10, 1967, T 33829
Int. Cl. B23p 25/00
U.S. Cl. 29—527.1 4 Claims



A method for making an article of manufacture for use in sound recording and/or reproducing apparatus by forming a single piece in an injection molding step. The single piece has a chassis portion, a lever portion, and a number of other portions connecting the chassis portion to the lever portion. The chassis portion is then connected to the lever portion by a separate connecting member and a predetermined number of the connecting portions are severed. If all of the connecting portions are not severed, only one disposed in the direct vicinity of the separate connecting member is left unsevered.

3,683,490

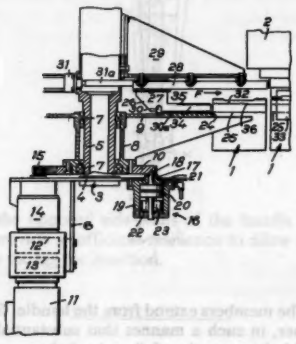
AUTOMATIC TOOL LOADER FOR A MACHINE TOOL

Martial Chabrier, Le Pecq, France, assignor to C.H.M.P. Berthiez, Paris, France

Filed June 1, 1970, Ser. No. 41,909
Claims priority, application France, June 6, 1969, 6918821
Int. Cl. B23q 3/155
U.S. Cl. 29—568 6 Claims

An automatic tool loader for a machine tool comprises a magazine containing a plurality of tool holders at respective locations therein, a handling device for removing a required tool holder from the magazine and for supplying the tool holder to a machine tool, the magazine and the handling device being relatively movable to select the required tool holder, the magazine comprising for each tool holder a retaining device which engages and retains the tool holder in the magazine with a limited resiliently biased retaining force which the handling device must overcome to supply the required tool holder to the machine tool, the handling device

comprising a connecting device which connects the required tool holder to the handling device with a limited resiliently biased connecting force, said force being sufficient to enable the handling device to supply to tool holder to the machine and to subsequently remove the tool holder from the machine



tool when it is released thereby, said force being overcome by the handling device when the tool holder is retained by the machine tool for use or when the tool holder is returned to its location in the magazine, whereby to disconnect the handling device from the tool holder.

3,683,491

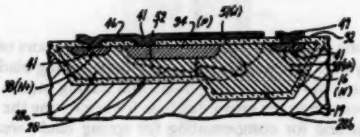
METHOD FOR FABRICATING PINCHED RESISTOR SEMICONDUCTOR STRUCTURE

Carroll E. Nelson, 1009 Vistadale Drive, Dallas, Tex.; Hans R. Camenzind, 862 Springer Road, Los Altos, Calif., and Albert P. Youmans, 11249 Redondo Court, Cupertino, Calif.

Division of Ser. No. 791,657, Jan. 16, 1969, Pat. No. 3,556,219. This application Nov. 12, 1970, Ser. No. 88,989

Int. Cl. B01j *17/00*; H01g *13/00*

U.S. Cl. 29—571 3 Claims



Method for fabricating a pinched resistor semiconductor structure having a channel and a field plate to provide a depletion region which pinches off the channel so that the current flow remains constant for any voltage after a predetermined voltage is reached.

3,683,492

APPARATUS AND PROCESS FOR MAKING A PRESSURE ELECTRICAL CONTACT ASSEMBLY FOR AN ELECTRICAL DEVICE

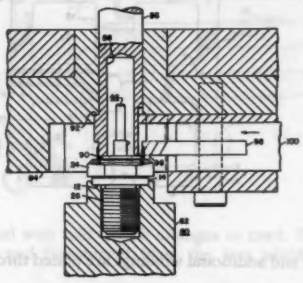
Alfred Meyerhoff, Greensburg, and Walter E. Blake, Jeannette, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 720,062, April 10, 1968, abandoned. This application Feb. 6, 1970, Ser. No. 9,378

Int. Cl. B01j *17/00*; H01l *1/10*

U.S. Cl. 29—588 6 Claims

Protrusions formed in a case member of a compression bonded encapsulated electrical device act on a resilient member and accurately maintain the compression force acting



on the electrical contacts and the semiconductor element of the device.

3,683,493

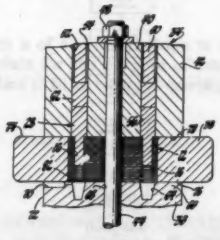
METHOD AND APPARATUS FOR MANUFACTURING A SQUIRREL CAGE ROTOR

Charles Begovich, Troy, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed April 7, 1970, Ser. No. 26,191

Int. Cl. H02k *15/02*, *15/04*

U.S. Cl. 29—598 4 Claims



A method and apparatus for fabricating conductor bars and end rings in a squirrel cage rotor wherein a hollow slug of conductive material is heated and extruded through the winding slots of a rotor core to form conductor bars and conductive end rings in an integral squirrel cage winding assembly.

3,683,494

MONOLITHIC MAD

William Baird Fritz, Harrisburg; Neil Harrison Sanders, Carlisle; Emerson Marshall Reyner, II, Harrisburg, and Harry Alvin Fox, Jr., Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

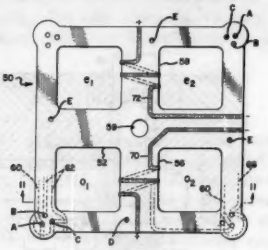
Continuation-in-part of Ser. No. 601,500, Dec. 13, 1966, Pat. No. 3,506,973. This application Jan. 15, 1970, Ser. No. 7,333

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 3 Claims

A method of providing conductive windings on a magnetic

core wherein said windings are plated through small apertures



in the core and additional windings are plated through a larger aperture.

3,683,495

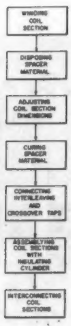
METHOD OF MAKING DISK-TYPE WINDINGS FOR ELECTRICAL INDUCTIVE APPARATUS

Landis E. Feather, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1971, Ser. No. 112,657

Int. Cl. H01f 7/06

U.S. Cl. 29—605 **6 Claims**



A disk-type winding for electrical inductive apparatus which is constructed from individual coil sections containing one or more disk-type coils. The individual sections are wound separately with the conductors secured by a bonding material. The bonding material also serves as a spacing member when the coil sections are assembled into a complete winding assembly.

3,683,496

WALLBOARD JOINT BLADE

Ray Johnson, 36 Strawberry Hill Road, Natick, Mass.

Filed Jan. 13, 1971, Ser. No. 106,228

Int. Cl. B26b 3/00

U.S. Cl. 30—169 **10 Claims**

A broad blade for applying and trimming cement at the seams, corners, and nail holes in wallboard extends from a handle in telescope fashion, enabling the user to extend his reach to, for example, ceilings. The blade is an extension of one sliding member, which slides within a second, both contained within the handle and both engaged at stop holes along each sliding member by a pin, which the user manipulates with

his thumb. The members extend from the handle, first one and then the other, in such a manner that substantial support is given to the blade, even when fully extended.

3,683,497

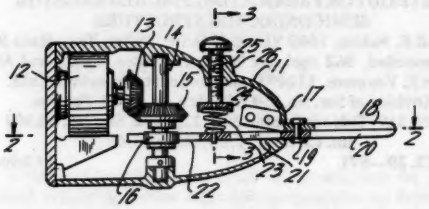
CUTTING IMPLEMENT OR TOOL WITH BLADE TENSIONING DEVICE

William Duffy, Jamesburg, and John Students, Roselle Park, both of N.J., assignors to J. Wiss & Sons Co., Newark, N.J.

Filed Sept. 21, 1970, Ser. No. 74,088

Int. Cl. B26b 15/00

U.S. Cl. 30—228 **7 Claims**



A cutting implement or tool, for example, scissors or shears driven by motor means having a stationary cutting blade and a cooperating movable cutting blade and having means for applying pressure to the movable blade for improving the cutting operation and for compensating for spring blade wear. The pressure means preferably consists of a volute spring the lower end of which is located on the shank of the movable blade. The upper end of the spring is preferably held by a screw by which the force of the spring may be adjusted.

3,683,498

CUTTING KNIFE

Terence Gerald Riley, Sheffield, England, assignor to The Stanley Works, New Britain, Conn.

Filed Nov. 16, 1970, Ser. No. 89,654

Claims priority, application Great Britain, Nov. 18, 1969, 56,281/69

Int. Cl. B26b 5/00

U.S. Cl. 30—339 **3 Claims**

A disposable cutting knife having a molded plastic handle which tightly holds an insertable cutting blade in assembled position. One of the opposed side walls engaging a flat side of

the blade provides a lug which is received in an aperture of the blade. The top surface of the lug forms an upwardly inclined

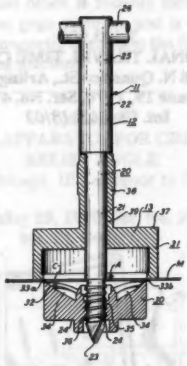
ramp and the opposed side walls of the handle are laterally lanced to provide a sufficient resilience to allow a rigid blade to pass over the lug for insertion.

3,683,499

UNITARY PIERCING PUNCH DEVICE

Arthur H. Robinson, Jr., Somerville, N.J., assignor to Makrite, Inc., Middlesex, N.J.

Filed Aug. 7, 1970, Ser. No. 62,059
Int. Cl. B26f *1/00*
U.S. Cl. 30—360 **2 Claims**



A unitary piercing punch device, adapted to provide piercing and aperture cutout operations on a length of material such as a formed metal sheet, and which further provides for retention of the cutout slug in the punch on disassociation of the elements to enable simplified removal thereof.

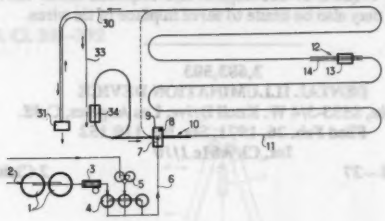
3,683,500

MANUFACTURE OF CHEESES TO BE SOLD BY UNIT

Jacques Latapy, 14, Rue Georges Ville, 75 Paris 16th, France

Filed Oct. 7, 1969, Ser. No. 864,362
Claims priority, application France, Oct. 7, 1968, 68168966
Int. Cl. A01j *25/12, 25/16*
U.S. Cl. 31—46 **10 Claims**

A machine for the industrial manufacture of cheese includes a milk-filling station, a curd-slicing station, a curd-transfer station and a washing station. Jars are circulated in a closed path sequentially through the stations so that the jars



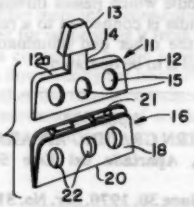
are first filled with milk which changes to curd. The curd is then sliced and transferred from the jars which are then washed.

3,683,501

ADAPTER FOR DENTAL IMPLANTS

Alfred E. Edelman, 2723 Federal St., Camden, N.J.

Filed Feb. 12, 1971, Ser. No. 114,766
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **20 Claims**



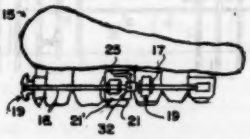
A casing which is of a size and shape to encase an undersized dental implant for the purpose of adapting the undersized dental implant to fit an enlarged opening in a jaw bone.

3,683,502

ORTHODONTIC SYSTEMS

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y.

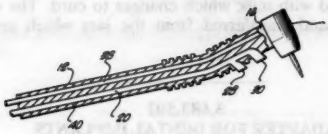
Filed Sept. 14, 1970, Ser. No. 72,070
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **11 Claims**



A rigid arch wire is fixed in position on bracket-holding tooth bands on selected teeth. Every tooth whose root is to be shifted, has one of such bands thereon, and the bracket associated therewith is rotatably mounted on the arch wire. Any tooth to be swung in, about its root tip as an axis, needs no band thereon. The arch wire serves as a scaffold to support pressure-exerting elements, each of which consists of a sleeve which snaps on and is provided with a securing means, as for instance, a set screw. Resilient fingers or various shapes, or

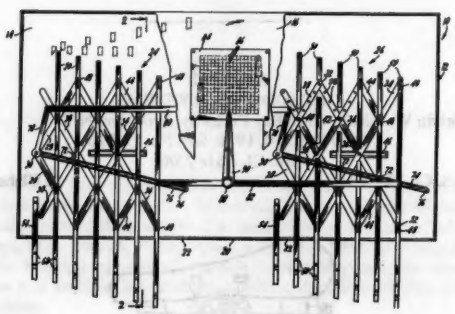
adapted to be bent into various shapes, extend from the sleeve and are adjustably stressible. They are arranged to press on the teeth to be moved, their bands, or against a bracket part as need may require to accomplish the required tooth movement, and may also be made to serve in place of tie wires.

3,683,503
DENTAL ILLUMINATION DEVICE
Erwin Klein, 8533-3/4 W. Knoll Drive, Los Angeles, Calif.
Filed Feb. 26, 1971, Ser. No. 119,152
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **2 Claims**



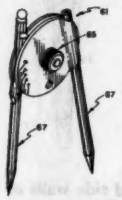
A handpiece for holding dental tools which contains an illuminating system is disclosed. The illuminating system consists of a fiber optic bundle which passes through the handpiece. The fiber optic bundle is connected to a remote light source on one end, with the other end illuminating the region in which the dental tool is to be operated.

3,683,504
PATTERN GRADING APPARATUS
Mikulas M. Roth, Apartado del Este 50, 474 Caracas, Venezuela
Filed June 30, 1970, Ser. No. 51,066
Int. Cl. A41h *3/00*
U.S. Cl. 33—17 A **8 Claims**



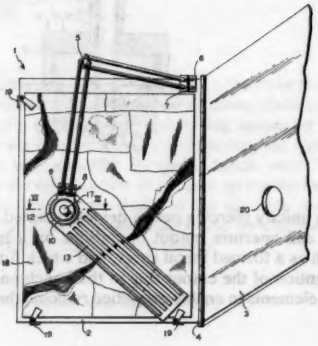
A pattern grading machine includes a pair of lazy-tong linkages each mounting a row of spaced, parallel pattern-supporting bars for longitudinal sliding movement. A slotted positioning bar interconnects the pattern-supporting bars in each row and a manually movable control bar interconnects the positioning bars and the lazy-tong linkages for selective lateral spacing of said pattern-supporting bars through actuation of said lazy-tong linkages and relative longitudinal movement of said pattern-supporting bars in a predetermined ratio through movement of said positioning bars.

3,683,505
CIRCLE MAKER APPARATUS
Arnold R. Graef, 2160 N. Riverside Blvd., Wichita
Continuation-in-part of Ser. No. 803,593, March 3, 1969, Pat. No. 3,537,181. This application Oct. 23, 1970, Ser. No. 83,274
Int. Cl. B43l *9/20*
U.S. Cl. 33—27 B **7 Claims**



This invention is a marking device including a main support body; clamp members connected through connector means to the support body; and marking means mounted within the respective clamp members whereupon the marking means are readily adjustable relative to each other and securely anchored in a selected position and operable to inscribe circles and the like. More particularly, this invention relates to a circle maker apparatus having marking means adjustable connected to a support body structure and the marking means may be interchanged with various ones thereof for the desired function. This invention also relates to a marking device having cooperating clamp members holding a new and novel stylus in the proper relationship for proper usage.

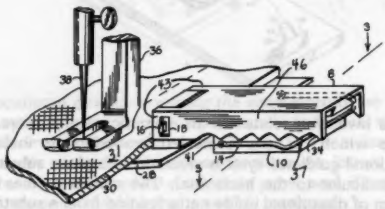
3,683,506
NAVIGATIONAL TRAVEL TIME COMPUTER
John Marshall, 1228 N. Quantico St., Arlington, Va.
Filed June 19, 1970, Ser. No. 47,794
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 R **15 Claims**



A computer scale member has a wind or current triangle scale based on a standard navigational scale on one edge thereof. The member also has a plurality of travel time scales based on travel time at predetermined speeds. At one end of the member is a hole and a compass index around the hole. A clamping device releasably clamps the member to a clamping section on the free end of a lost motion arm mechanism, the other end of which is attached to a map supporting surface.

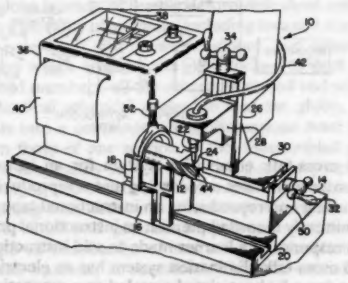
3,683,507
Patent Not Issued For This Number

3,683,508
ADJUSTABLE GAGE FOR SEWING MACHINES
Arthur Kalish, 64-10 Dieterle Crescent, Rego Park, N.Y.
Filed May 26, 1970, Ser. No. 40,499
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R 4 Claims



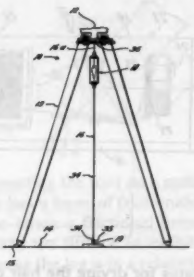
An adjustable gage for sewing machines comprising a base member and a gage of inverted U-cross-section, slidable on the base member. The base member is provided with a spring secured to the base member and engageable between a pair of a row of teeth provided on the underside of the gage, to permit an adjustment of the gage in a desired position relative to a fabric. A magnetized block is slidably mounted between the forward ends of the gage member and is displaceable vertically to engage by magnetic attraction the feeder plate or table surface of the sewing machine.

3,683,509
METHOD AND APPARATUS FOR CHECKING TOOL RELIEF ANGLE
William I. Kurz, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 18, 1970, Ser. No. 38,302
Int. Cl. G01b *5/20*
U.S. Cl. 33—201 10 Claims



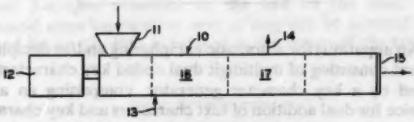
A method and apparatus for determining the relief angle of the cutting edge on a helical cutting tool is provided by utilizing a sensing probe connecting the tool during relative movement between the probe and the tool in a first plane which can be readily mathematically converted to a functionally requisite angle in a second plate.

3,683,510
PLUMB BOB DEVICE
Wilfred T. Gros, Rte. 12, Box 565, Houston, Tex.
Filed Oct. 29, 1970, Ser. No. 85,095
Int. Cl. G01c *15/10*
U.S. Cl. 33—392 1 Claim



A plumb bob device suspended on a flexible member in a liquid in a closed container. The container is provided with a centrally positioned, upwardly pointed indicator means for aligning with the plumb bob to indicate a true vertical relationship, and a flexible member is connected to the top end of the closed container for suspending it from a fixed position. A flexible member is connected to the lower end of the container and extends downwardly for connection to a weight or the like so as to tether the closed container to accommodate only very limited movement thereof so that the plumb bob may accomplish its function.

3,683,511
METHOD OF REMOVING VOLATILES FROM AN ELASTOMER
Charles R. Johnson, and Seid H. Moosavian, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sept. 4, 1970, Ser. No. 69,806
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 14 Claims

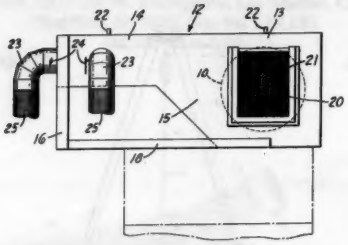


Volatile hydrocarbons are removed from an elastomer by mechanically working the elastomer in an extruder to increase its temperature, admixing an inert gas or water through at least one inlet, allowing vapors to flash from the mixture through at least one vented section in the extruder and discharging the elastomer from the end of the extruder at a lower content of volatile hydrocarbons. Oil, antioxidant and other elastomer compounding materials can optionally be added during the operation.

3,683,512
HAIR DRYING APPARATUS FOR DOGS AND THE LIKE

Harry J. Beam, Jr., 719 Creighton Ave., Dayton, Ohio

Continuation of Ser. No. 779,876, Nov. 29, 1968, abandoned.
This application Dec. 20, 1970, Ser. No. 96,981
Int. Cl. F26b 19/00
U.S. Cl. 34—243 3 Claims

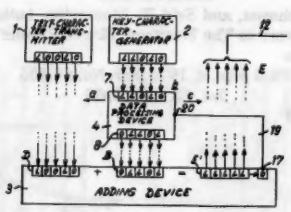


Portable apparatus for drying the hair of dogs and the like which includes a drier for supplying heated air under pressure to a plenum chamber for distribution through flexible hoses. The apparatus may be supported on top of a tier of cages or may be positioned elsewhere in the vicinity of the animal to be dried or fluff dried while grooming. Air distribution means is provided at the distal end of the hoses together with a means for releasably securing the air distribution means to the side of a selected cage or grooming area.

3,683,513
APPARATUS FOR AUTOMATICALLY ENCIPHERING AND/OR DECIPHERING A TEST CONSISTING OF MULTIDIGIT DUAL CODED CHARACTERS

Sture Nyberg, Zug, Switzerland, assignor to Anstalt Europaische Handelsgellschaft, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 748,350, July 29, 1968, abandoned. This application Nov. 19, 1970, Ser. No. 90,981
Int. Cl. G09c 1/10
U.S. Cl. 35—4 4 Claims

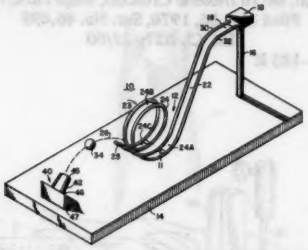


An apparatus for automatic enciphering and/or deciphering a text consisting of multidigit dual coded key characters supplied by a key character generator, comprising an adding device for dual addition of text characters and key characters. The adding device includes first inputs for introducing text characters, second inputs connected to the key character generator for introducing key characters, outputs for result characters obtained at each adding operation, and a transfer or carry output for transmission of a transfer signal when upon addition of the characters a transfer is obtained at the last digit. There is also provided a data processing device for digital signal sequences which is connected to the transfer or carry output, said data processing device being connected to said adding device ahead of said first or said second inputs, or following said outputs thereof, in order to modify the characters introduced into the data processing device in a definite manner, in accordance with a transfer or carry signal.

3,683,514
EDUCATIONAL AND RECREATIONAL DEVICE

James D. Hughes, Houston, Tex., assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Nov. 20, 1970, Ser. No. 91,395
Int. Cl. G09b 23/06
U.S. Cl. 35—19 R 5 Claims

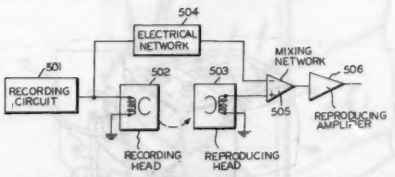


This invention relates to an educational and recreational device which, in one preferred embodiment, includes a directional guidance system mounted in a plane substantially perpendicular to the horizontal. The system defines a continuum of directional guide paths leading from a substantially horizontal guide path element, at its upper end, into a descending S curve, then through a first complete loop of a helical coil, and terminating at a desired exit point on a subsequent loop. The tangent to the exit point is selected to any desired angle with the horizontal. The guidance system is adapted to control the direction of motion of a spherical mass in its travel through the system and to place it into a ballistical trajectory after leaving the system. A catcher, positioned in the line of flight of the spherical mass, retrieves the mass at any selected point along the trajectory. In another embodiment the complete loop of the helical coil lies in a plane substantially parallel with the horizontal.

3,683,515
CROSS-TALK ELIMINATION SYSTEM FOR AN INSTRUCTIONAL TAPE RECORDER

Masahiro Kosaka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 2, 1970, Ser. No. 77,404
Int. Cl. G09b 19/04; G11b 5/44
U.S. Cl. 35—35 C 9 Claims

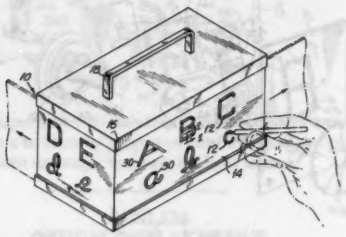


A cross-talk elimination system for an instructional tape recorder comprises a recording and a reproducing means for recording and reproducing an instructional tape which has intermittently recorded thereon an instructional program and an oral response of a learner made to said instructional program. Said cross-talk elimination system has an electric network for reducing a leakage signal coupled to a magnetic reproducing head from a magnetic recording head either magnetically or electrostatically.

Said electrical network produces an electrical signal having the same amplitude and phase characteristics as said leakage signal.

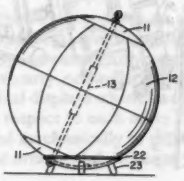
Said electrical signal is coupled differentially to said leakage signal for reducing said leakage signal.

3,683,516
EDUCATIONAL DEVICES
Jerome S. Fass, 17 Sussex Road, Great Neck, N.Y.
Filed June 5, 1970, Ser. No. 43,747
Int. Cl. G09b *11/04, 5/06*
U.S. Cl. 35—37 **10 Claims**



Educational devices involving the simultaneous use of the sight, auditory and tactile senses. An audio and visual signal is produced responsive to the movement of a tool or stylus which is manually controlled. In one application, the letters of the alphabet are preformed on a substrate panel, and, if correctly traced, the sound of the letter is audibly produced.

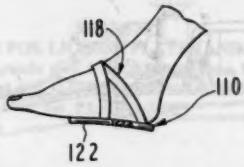
3,683,517
SECTIONAL CARTOGRAPHIC GLOBE
Irving J. Starworth, 238-23 117th Road, Elmont, L.I., N.Y., assignor to Milton Zucker
Continuation-in-part of Ser. No. 723,712, April 24, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 81,752
Int. Cl. G09b *27/08*
U.S. Cl. 35—46 A **7 Claims**



A new, simplified and compact knockdown cartographic globe is described, which is readily assembled and disassembled. This globe is made of readily deformable sheet material, shaped into a plurality of sections, including two end members (ordinarily polar caps of a terrestrial globe), and connecting side members which are adapted to be locked to each other and to the end members, all the side sections and end sections covering identical spherical angles, so that the globe, disassembled, fits into a container whose dimensions need be no greater than those of one section of the disassembled globe. The sections are readily replaceable to reflect geographic or political changes; and because of their relative size and shape, distortion during manufacture is minimized. A simplified base for the globe, which both provides support and rotation at the correct angle of declination of the axis, and facilitates assembly of the sections, is described. The side sections are locked to each other by rotation in the plane of a great circle passing through the pole, to provide perfect register when fully seated.

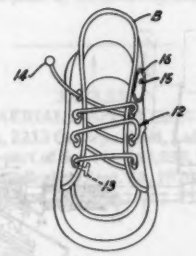
3,683,518
Patent Not Issued For This Number

3,683,519
NON-SLIP FOOT DEVICE
Adelene Creamer, 137 Palmer Ave., Mountain View, Calif.
Filed Dec. 31, 1969, Ser. No. 889,451
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **7 Claims**



A device for supporting the foot on a surface, such as a bed, wherein the device has a layer of frictionable material for underlying the foot to cause a frictional force to be developed between the layer and the surface to inhibit movement of the foot in one direction as the leg is in a relaxed, flexed condition. A number of embodiments of the device are disclosed.

3,683,520
SAFETY SHOELACES
Catalina Partagas, 2712 Wilderness Way, North Las Vegas, Nev.
Filed Oct. 29, 1970, Ser. No. 85,115
Int. Cl. A43b *23/00;* **A43c** *9/00*
U.S. Cl. 36—50 **7 Claims**

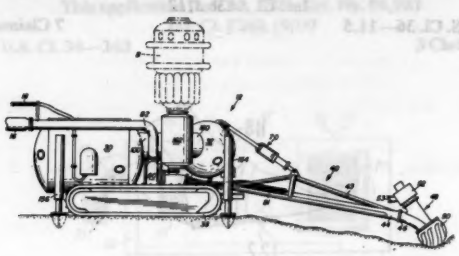


This invention consists of shoelaces having T-shaped structure on one end and a spherical member integrally formed on the other end. The T-shaped end of the shoelace is suitably secured in the boots or shoes while the aforesaid spherical member on the other end of each shoelace firmly secures the shoelace either by passing through an opening in the upper side of the boot or shoe or by being suitably secured to an inverted T-shaped structure or the like on the shoe. The aforesaid securing member may or may not be covered by a hinged lid or flap that is located in the instep of the boot or shoe.

3,683,521
SUBMERSIBLE DREDGE
Albert H. Sloan, Fort Lauderdale, Fla.; Jack I. McLelland, Palos Verdes Peninsula; Theodore F. Mangels, Newport Beach, both of Calif., and Robert J. Jantzen, Baltimore, Md., assignors to Ocean Science & Engineering, Inc., Washington, D.C.
Filed March 5, 1970, Ser. No. 16,751
Int. Cl. B63c *11/00;* **E02f** *3/88*
U.S. Cl. 37—56 **11 Claims**

A dredging system including a submersible, occupant-operated vehicle having an excavating tool carried thereby; a conduit extending from said tool to a location where said ex-

cavated material is to be deposited; a shore installation; and power and air conduits connecting said installations with the vehicle. The system is applicable to the excavation of large areas such as submerged deposits of sand and silt; the formation of narrow, deep trenches such as those utilized for various pipelines and cables; and the grading of level or specifically contoured areas for preparing the bottom for prefabricated structures.



3,683,522

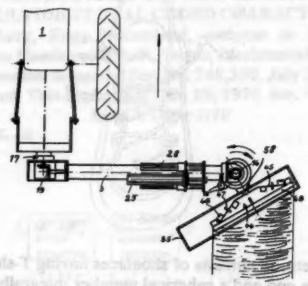
FRUSTOCONICAL ROTARY CUTTER FOR DIGGING TRENCHES

Louis Rousseau, and Joseph Rousseau, both of 8, Avenue Auguste Wissel, Neuville sur Saone (Rhone), France

Division of Ser. No. 645,184, June 12, 1967, Pat. No. 3,574,989. This application April 13, 1970, Ser. No. 27,882

Int. Cl. E02f 5/08

U.S. Cl. 37—91 3 Claims



Rotor-type cutter attachable to a tractor and the like vehicle, for carrying at the end of a supporting arm a tool for digging trenches. The tool is preferably in the form of a rotary cutter. Mechanisms are provided for adjusting the position of the tool relative to the vehicle and the soil. The supporting arm has a telescoping system actuated by hydraulic cylinders, for moving the tool toward and away from the vehicle. A gear system is provided for imparting rotational movement to the tool with respect to the supporting arm. Preferably, a linkage is secured between the vehicle and a portion of the arm, intermediate the vehicle and the tool, and hydraulic cylinders for adjusting the angular position of the linkage and thereby raising and lowering the tool together with the arm.

3,683,523

DIGITAL DISPLAY INDICATOR

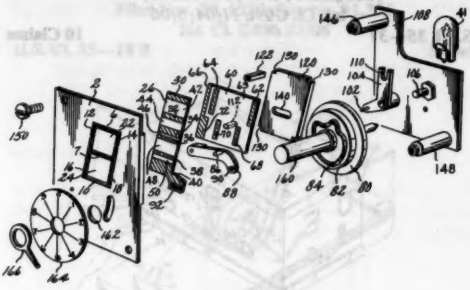
Robert L. Boyles, Wayland, Mass., assignor to General Electric Company

Filed Jan. 12, 1971, Ser. No. 105,854

Int. Cl. G09f 11/00

U.S. Cl. 40—28 C 18 Claims

A digital display indicator wherein a vertically movable shutter having horizontal segments formed thereon, and a horizontally movable shutter having vertical segments formed thereon are selectively positioned with respect to each other,



and to a slotted member in the form of a figure 8 for selectively displaying numerals from 0 thru 9.

3,683,524

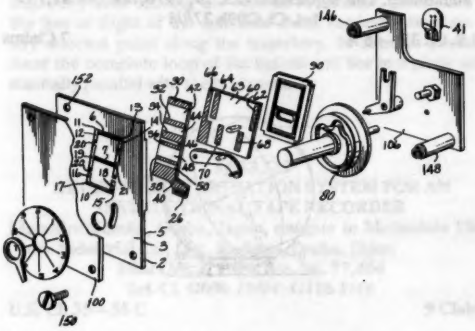
ILLUMINATED DISPLAY INDICATOR

Samuel Polonsky, Medway, and Robert L. Boyles, Wayland, both of Mass., assignors to General Electric Company

Filed Jan. 12, 1971, Ser. No. 105,855

Int. Cl. G09f 11/00

U.S. Cl. 40—28 C 9 Claims



An illuminated display indicator wherein a fresneled numeral 8 is placed between a light source and a slotted indicator member in the form of a numeral 8 for columnating the light from the light source in order to uniformly illuminate the bar slots of the slotted figure 8. A movable shutter may be positioned between the fresneled numeral 8 and the slotted numeral 8 for selectively blocking out one or more the indicator bar slots to display all or a portion of the slotted numeral 8.

3,683,525

AUTOMATIC IMAGE SHIFTING DEVICE

Keiji Fukui, 1-5, 1-chome, Soto-Kanda, Chiyoda-ku, Tokyo, Japan

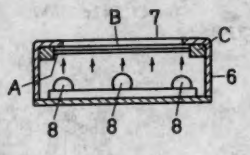
Filed July 14, 1970, Ser. No. 54,783

Int. Cl. G09f 11/30, 7/00

U.S. Cl. 40—36 1 Claim

This invention relates to an automatic image shifting device of the construction in which a picture plate and a sectioning plate are superposed, said picture plate being a single film sheet on which several kinds of images sectioned into strips each having a specified width are printed, said sectioning plate

being adapted to transmit only the strip portions of the same kind of pictures by shielding a part of said picture plate, said

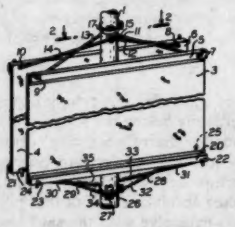


two plates superposed are relatively displaced at an interval of specified time to thereby project several independent pictures alternately into an image by a suitable light source.

3,683,526
OPTICAL DISPLAY DEVICE
Tibor Horvath, 944 Ave. R, Brooklyn, N.Y.
Filed June 8, 1970, Ser. No. 44,120
Int. Cl. G09f 11/02
U.S. Cl. 40—68 **2 Claims**

An optical display device comprises an assembly of a plurality of hollow, transparent, concentric spheres. The inner spheres are rotatably mounted with respect to the outer spheres. The spheres carry ornamental colored elements to present different optical displays when the spheres assume different positions with respect to each other. The assembly can be rotatably oscillated mechanically to produce continuously changing arrays of the ornamental elements.

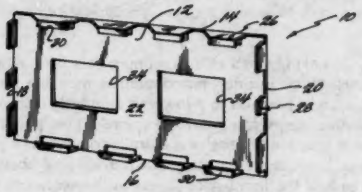
3,683,527
POLE DISPLAY CONSTRUCTION
Michael G. Gilman, Iroquois Ave., Palisades, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,257
Int. Cl. G09f 1/00
U.S. Cl. 40—125 G **10 Claims**



Improved banner assembly including an upright supporting pole member, banner means positioned on opposite sides of the pole each disposed between two horizontal members and rod means, spring loaded or not, disposed between each end of each horizontal member and a location on said upright supporting pole angularly disposed away from the side of the pole adjacent to that horizontal member.

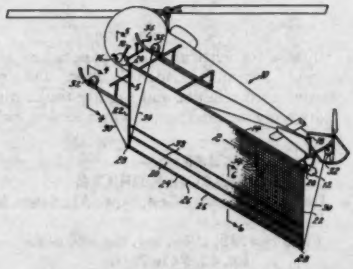
3,683,528
Patent Not Issued For This Number

3,683,529
HOLDER FOR LICENSE PLATES AND SIGNS
Ray Reed, 212 Arvada Ave. N.E., Albuquerque, N. Mex.
Filed Aug. 14, 1970, Ser. No. 63,852
Int. Cl. G09f 7/00
U.S. Cl. 40—209 **8 Claims**



A pliable, plastic plate having means secured to the front face for releasably holding a license plate or sign and having flexible, magnetically impregnated tape secured to the back face for holding the plate to metallic objects.

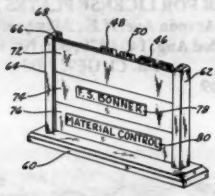
3,683,530
AERIAL DISPLAY SIGN
James G. Robinson, 2213 Oakwyn Road, Lafayette Hills, Pa.
Continuation-in-part of Ser. No. 763,858, Sept. 30, 1968, abandoned. This application Sept. 30, 1970, Ser. No. 76,897
Int. Cl. G09f 21/12
U.S. Cl. 40—215 **23 Claims**



An electrically illuminated aerial display sign that is carried by helicopter. The sign may be collapsed in order to permit ease of landing. The message exhibited by the sign may be changed while the sign is being carried in flight.

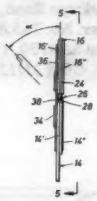
3,683,531
Patent Not Issued For This Number

3,683,532
DISPLAY DEVICE
Homer R. Ankrum, 6431 University Ave, N.E., Fridley, Minn.
Continuation of Ser. No. 853,823, Aug. 28, 1969, abandoned, which is a division of Ser. No. 621,672, March 8, 1967, Pat. No. 3,473,249. This application Nov. 16, 1970, Ser. No. 90,159
Int. Cl. B43m *17/00*
U.S. Cl. 40—358 2 Claims



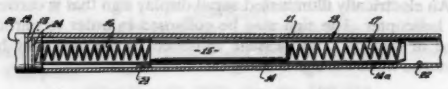
A device having a pair of upright members for holding a display panel which in one embodiment is movable between a vertical upright position to a lowered angularly disposed position suitable for writing on the panel. The panel display member is adapted to receive a plurality of sheets of paper arranged in a sequential order, the plurality of sheets being limited to half the number of sheets in the sequence with the identifying indicia on opposite sides of each sheet being spaced apart one-half the total units in the total sequence. A series of vertically arranged decorative panel portions may be positioned on the back side of the display panel.

3,683,533
FILING DEVICE
Vernon Kelly, 706 Main St., Dallas, Tex.
Filed June 24, 1970, Ser. No. 49,344
Int. Cl. B42f *21/04*
U.S. Cl. 40—359 11 Claims



A folder suitable for vertically filing papers having a rearwardly inclined protruding identification tab pivotally mounted relative to the folder and slightly resiliently biased toward its rearwardly inclined position by a torsion spring.

3,683,534
GUN RECOIL REDUCER
Marvin A. Davis, 66 Ocean View, Apt. 33, Santa Barbara, Calif.
Filed Nov. 28, 1969, Ser. No. 880,608
Int. Cl. F41c *21/18*
U.S. Cl. 42—1 R 8 Claims

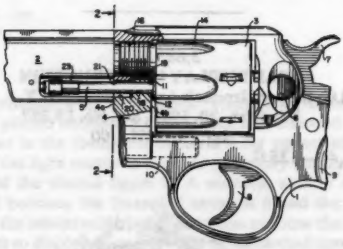


A recoil reducer is formed to be readily installable in and removable from the location of a barrel of a hand gun, such as a shot gun, so as not to require extra equipment on the gun to mount the reducer.

3,683,535
HANDGUN GRIP CONSTRUCTION
Karl R. Lewis, 77 Olney Road, Wethersfield, Conn.
Filed Aug. 15, 1969, Ser. No. 850,369
Int. Cl. F41c *23/00*
U.S. Cl. 42—71 P 3 Claims

A grip construction for a handgun, such as a revolver, includes a solid one-piece grip of wood or the like which completely surrounds a frame stud by means of which it is secured to the frame. The grip is therefore uninfluenced in its own shape and size by the shape of the frame so that its configuration is very flexible and can be varied to fit any type of hand or esthetic desire.

3,683,536
REVOLVER CRANE
Harry H. Sefried, II, New Haven, Conn., assignor to Ruger Sturm & Co., Southport, Conn.
Filed Jan. 12, 1971, Ser. No. 105,849
Int. Cl. F41c *1/00*
U.S. Cl. 42—62 2 Claims



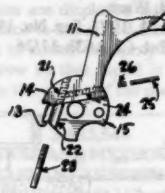
In a revolver of the swing-out-cylinder type, the portion of the frame immediately below the longitudinally disposed, internally threaded, barrel-receiving bore thereof is strengthened by forming the forward portion of the ejector rod support section of the cylinder crane with a concave recess that exposes about one half of that portion of the ejector rod that is co-extensive with the said ejector rod support section, and by providing the portion of the frame immediately below the barrel-receiving bore with an integrally formed arcuate protrusion that extends into the upper part of the said recess formed in the cylinder crane when the cylinder of the revolver is in its closed position.

3,683,537

ADJUSTABLE HAMMER FOR AUTOMATIC PISTOLS

Mariano Silva, Route 1, Box 141 A, Deming, N. Mex.

Filed Jan. 7, 1971, Ser. No. 104,624
Int. Cl. F41c *19/00*
U.S. Cl. 42—69 R 4 Claims



An adjustable hammer for automatic pistols particularly of the Colt .45 type which because the gun was designed for Military Combat Use the trigger pull was so heavy that it was almost impossible to shoot the gun accurately. The hammer is a standard shaped hammer having two drilled and tapped holes as well as a sleeve sweated in. One screw travelling through the sleeve acts as an adjusting screw and the other is a locking screw. The adjusting screw acts directly against the sear and controls the amount of sear — hammer notch engagement.

3,683,538

HEELPLATE FOR A RIFLE

Loris Locatelli, Via Trento 38, Toscolano, Brescia, Italy

Filed March 17, 1971, Ser. No. 125,038
Claims priority, application Italy, March 26, 1970, 53096 A/70
Int. Cl. F41c *23/00*
U.S. Cl. 42—74 4 Claims

A heelplate for a rifle butt has a rigid plastics part including a bulge at the upper end of the heelplate. The lower end of the heelplate is formed by a resilient pad merging smoothly with the rigid plate below the bulge.

3,683,539

Patent Not Issued For This Number

3,683,540

Patent Not Issued For This Number

3,683,541

WEED GUARD FOR THE HOOKS OF A TREBLE HOOK

Robert L. Cather, 594 Pardee St., Easton, Pa.

Filed Aug. 4, 1970, Ser. No. 60,844
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.4 10 Claims

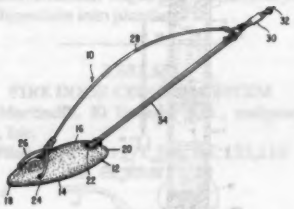
A weed guard serving the plural hooks of a conventional treble or "gang" hook comprising a flexible, normally planiform disc of a thin plastic sheet material. The disc has a diameter greater by a predetermined small amount than that of the radial extent of the hook points, a central hole for the passage therethrough of the shank or shaft of the treble hook of a size which enables the disc to ride more or less loosely up and down said shank, and an outer-edge portion which is highly flexible and readily penetrable by any one or all of the hook points on which the disc normally rests and seats as the lure following a cast is being retrieved. The outer-edge portion has a multiplicity of closely spaced short-length slits which extend non-radially from its outer edge a short distance into the body portion of said disc and its body portion is provided with a preferably non-radial cut extending from its outer edge to the edge of its aforesaid central hole. The disc is then sealed closed about the hook shank or shaft by an adhesive element.

3,683,542

ANTI-FOULING SINKER ASSEMBLY FOR FISHING LINES

Rafael Pecchio, 4ta Calle, Con Av Andres Bello #13, Los Palos Grandes, Caracas, Venezuela

Filed Feb. 10, 1971, Ser. No. 114,143
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.97 5 Claims



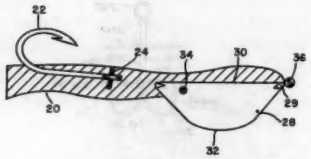
A sinker comprising a weighted body member having a relatively rigid bridle element pivotally connected about a transverse axis to the forward end of the body member, the bridle continuing as a relatively stiff or rigid leader including connection means for connection to a fishing line, and a resilient band connected between the trailing end of the body member and said connection means, said body member being pivotal about said bridle when striking an obstruction upon retrieval from a body of water and causing the resilient band to be tensioned whereby the body member "skips" or inverts over obstructions; and said body member including a flat "undersurface" whereby the rigid leader normally projects upwardly from the body member when the latter rests on the "bottom" to orient a fish hook above the "bottom."

3,683,543

FISHING LURE

Robert C. Santosuosso, 42 Sterling St., Malden, Mass.

Filed July 13, 1970, Ser. No. 54,379
Int. Cl. A01k 85/00
U.S. Cl. 43—42.09 4 Claims



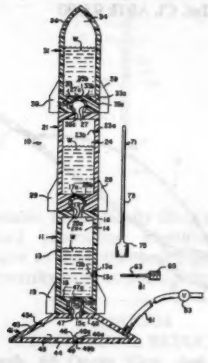
An artificial fishing lure having an elongated body is provided with a weighted keel at its lower leading portion and a hook at its upper trailing portion. The keel is flat with a rounded lower edge and serves to maintain the lure in an upright position while at the same time causing a side-to-side motion of the lure when pulled through the water. The rounded configuration of the lower edge along with the location of the hook on the upper surface of the lure inhibits the lure from snagging on weeds. The body portion is contoured to provide an up-and-down undulating motion of the lure as it moves through the water.

3,683,544

REACTION TOY ARRANGEMENT AND METHOD

Reginald F. Pippin, Jr., 7606 Ruxway Road, Towson, Md.

Division of Ser. No. 504,300, Oct. 24, 1965, Pat. No. 3,550,313. This application Dec. 29, 1970, Ser. No. 102,294
Int. Cl. A63h 27/16, 27/14
U.S. Cl. 46—74 B 32 Claims



A fluid discharge reaction-propelled toy missile with multiple stages releasably interconnected by pressurizable, collapsibly flexible gripping wall sections, illustrated as pressure-expendable convex hollow bulbous gripping sections each resiliently releasably directly gripping a respective succeeding stage fluid discharge propulsion orifice and releasably sealing it from fluid discharge communication with the atmosphere. Self-sealing lateral inlet valves provided in individual stages enable separate individual stage pressurization from an external pressure source. Missiles are launched from a fluid-pressurizable ground-launching pad having a similar releasable missile-holding connection, with launch simulation enhancement provided by controlled-release lateral liquid spray orifices and a spray-enhancing annular deflector ring.

3,683,545

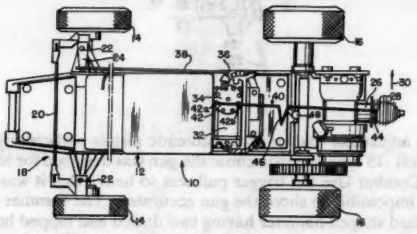
Patent Not Issued For This Number

3,683,546

CONTROL SYSTEM FOR REMOTELY CONTROLLED MODEL CAR

John M. Congdon, Seattle, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Filed Nov. 1, 1971, Ser. No. 194,241
Int. Cl. A63h 33/26
U.S. Cl. 46—244 B 19 Claims



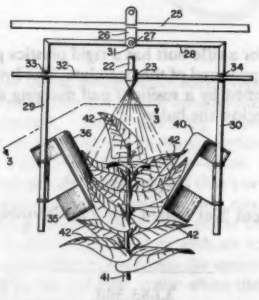
A model automobile or boat having a steering mechanism and a motor with a throttle control. A single remotely controlled servomechanism operatively connected to both the steering mechanism and the motor throttle control. The servomechanism has a conventional straight-arm connection to the steering mechanism. In its intermediate position, the servomechanism holds the steering apparatus in a straight ahead position, and it is movable in a first direction to turn the car to the right, and movable in a second direction to turn the car to the left. The same servo unit is connected to the throttle control mechanism through a linkage which functions in a manner that with the servomechanism in its intermediate position, the throttle is at a high setting whereby the motor is turning at a higher speed to cause the vehicle to travel faster. Movement of the servomechanism in either the first or second direction causes a movement of the throttle control linkage to move the throttle to a lower speed setting. Thus, if the car is turned in either a right or left direction, the motor throttle is moved to a lower setting, while the throttle is at a higher setting with the car traveling straight ahead.

3,683,547

SELF-CENTERING SPRAYING APPARATUS

Kendall L. Harden, Anderson Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 11, 1971, Ser. No. 114,554
Int. Cl. A01g 25/00
U.S. Cl. 47—1.7 8 Claims



An improved crop spraying apparatus, particularly adapted

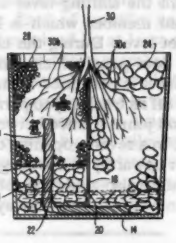
for spraying tobacco plants, is suspended for lateral movement from the boom of a self propelled mobil sprayer having a built-in tank and pump for supplying a spray nozzle on the spraying apparatus. The spraying apparatus is suspended from the boom by a self-centering linkage which includes oppositely disposed sensing elements, preferably in the form of curved surfaces forming a converging-diverging channel. The sensing elements are designed to contact the leaves on opposite sides of successive plants in a continuous row of tobacco plants. The sensing elements are displaced laterally on contacting a misaligned plant which is translated into lateral movement of the pivoted linkage to center the spray nozzle over the top of each plant in the row so that liquid is sprayed downwardly from the nozzle over the center of the plant stalk.

3,683,548

PLANT CONTAINER AND METHOD OF GROWING A PLANT THEREIN

Robert F. Hagerty, 10½ Legare St., Charleston, S.C.

Filed Feb. 22, 1971, Ser. No. 117,458
Int. Cl. A01g *27/00*
U.S. Cl. 47—38.1 **11 Claims**



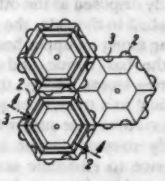
A plant container and a method of growing plants utilizing the same wherein vertical and horizontal partitions are placed in a container to accommodate two different types of soil or plant growing media, one being a coarse medium located at the bottom of the container below the horizontal partition and above the horizontal partition to one side of the vertical partition; and the other being a fine medium located above the horizontal partition to the other side of the vertical partition. A wick is placed in the container to extend from the coarse medium at the container bottom upwardly through the horizontal partition into the fine medium for delivering moisture thereto. The coarse medium is primarily used for transmitting water and oxygen to the roots while the fine medium is employed to impart nutrients such as minerals to the plant. Water is initially introduced into the container only through the coarse medium and is transmitted to the fine medium through the wick. In placing the plant in the container, the roots in the plant are divided on opposite sides of the vertical partition so that a portion of the roots grow in the coarse medium and another portion in the fine medium.

3,683,549

FLOWERPOT

Gerhard Simmon, Waltzstr. 18, 2000 Hamburg 52, Germany

Filed March 17, 1970, Ser. No. 20,375
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **4 Claims**



A flowerpot having protrusion means and recess means in each of the sides of an angular, upper marginal portion. The protrusion means and recess means on each side are mirror-inverted symmetrical to the vertical center line of the respective side for engaging like protrusion means and recess means in an adjacent flowerpot. Downwardly tapering wall means extend from the upper marginal portion to the base of the pot.

3,683,550

PLANT CULTURE METHOD AND PRODUCT

Donald A. Corlett, Jr., Concord, and Panos D. Caldis, Berkeley, both of Calif., assignors to Del Monte Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 826,445, May 21, 1969, abandoned. This application April 1, 1970, Ser. No. 24,610
Int. Cl. A01g *1/00*
U.S. Cl. 47—58 **21 Claims**

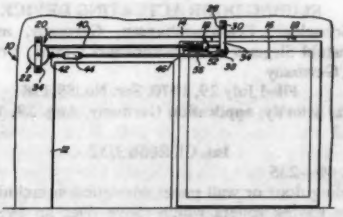
A method for reproducing large numbers of pineapple plants using a three stage plant tissue culture technique. Also the product of latent embryoid tissue (i.e., bud clusters) used in the same technique. In an induction stage, latent embryoid tissue is derived and induced to grow from an excised plant meristem. Such tissue is then grown or proliferated in an aqueous nutrient medium under conditions whereby differentiation of tissue into plantlets is inhibited. In a preferred method, the latent embryoid tissue is proliferated to a desirable amount and then transferred to a storage bank for unlimited storage. When desired, a portion of tissue may be removed from the bank and further proliferated. Also, the storage bank product. Then, in a differentiation stage, the latent embryoid tissue is caused to differentiate into plantlets.

3,683,551

FIRE DOOR CLOSING SYSTEM

Herman Y. Martindill, El Dorado, Ark., assignor to United Specialties, Inc.

Filed April 12, 1971, Ser. No. 133,116
Int. Cl. E05f *15/20*
U.S. Cl. 49—4 **2 Claims**



A door closing system for a door supported for movement along a predetermined path. An elongated tension member is length-wise disposed along the path of movement of the door for longitudinal shifting and a fusible anchor is operatively as-

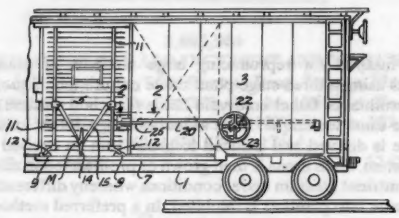
sociated with the tension member to anchor it against movement in a first lengthwise direction. A spring mechanism is operatively associated with the anchor member and yieldingly biases the same in the aforementioned first direction. The door includes a follower guidingly engaged with the tension member for movement therealong and the door is shiftable in the aforementioned first direction to a closed position and in the opposite direction to an open position. An abutment is carried by the tension member on the side of the follower opposite to the aforementioned first direction when the door is in the open position and the spring structure biasing the tension member in the first direction is operatively connected thereto at a point spaced in the first direction from the follower of the door when the door is in its closed position, the abutment or enlargement carried by the tension member being abuttingly engagable with the follower of the door upon movement of the tension member in the first direction whenever the door is shifted from its closed position toward its open position in order to transfer the biasing action of the spring structure to the door through the follower so as to bias the door to its closed position upon melting of the fusible anchor.

3,683,552

PLUG DOOR CONTROL MECHANISM

Luther L. Bollinger, Sr., Reading, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Nov. 9, 1970, Ser. No. 87,856
Int. Cl. E05d *15/10*
U.S. Cl. 49—209 **5 Claims**



Door operating mechanism particularly adapted for railway house car sliding doors of heavy "plug" type which are shifted transversely of the wall out of the door opening before movement alongside the car wall and are shifted transversely of the wall into the door opening after movement along the wall from open position to a position abreast of the opening. The mechanism includes means automatically holding the door spaced from the car wall when the door is being moved along the wall, but freely accomodating shifting of the door transversely of the wall out of and into the door opening when the door is opposite the wall opening.

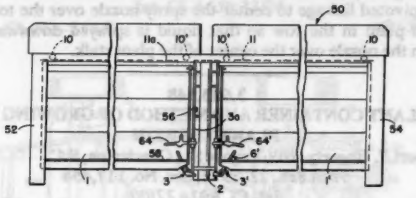
3,683,553

SLIDING DOOR ACTUATING DEVICE

Felix Schneider, Eckmannshausen, Germany, assignor to Rheinstahl Siegener Eisenbahnbedorf GmbH, Dreis-Tiefenbach, Germany

Filed July 29, 1970, Ser. No. 59,128
Claims priority, application Germany, Aug. 29, 1969, P 19 43 937.3
Int. Cl. E06b *3/52*
U.S. Cl. 49—235 **9 Claims**

A sliding door or wall panel construction includes a panel member having rollers which move over an overhead rail structure in order to permit movement of the panel to an opened and to a closed position. In the closed position the roller adjacent the closing end moves downwardly off the rail structure and the closure device includes a lever member engageable in a pivot lever of an associated closing shaft which is mounted in an upright position adjacent the closure post, for example in a freight car. The closure device includes a pivotal lever carried on the panel or door element which projects out of a recess at the interior of the door element, for example, and which includes a shifting lever portion which is engageable over a cam portion of the pivot lever when the lever is moved in a closing direction to facilitate guidance of an engagement portion into engagement with a portion of the pivot lever. In one embodiment, the shifting lever includes a recessed formation which is engageable over a ball or a ball formation carried on or defined on the pivot lever, and in



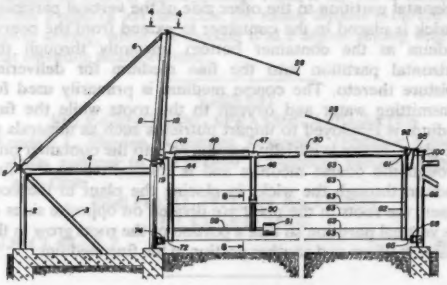
another embodiment the shifting lever carries or engages a roller or ball-shaped member which is located in a socket defined on the pivot lever. During the closing movement of the pivot lever the door panel which carries it is guided in a closing direction and it is permitted to move so that it roller moves downwardly off its trackway to permit interengagement of the ball and socket joints formed between the shifting lever and the pivot lever. In a reverse opening direction the shifting lever raises the door upwardly to disengage the ball and socket joint connection and to also guide the roller on its upper portion into engagement with rail or trackway.

3,683,554

VEHICLE ACTUATED AUTOMATIC GATE

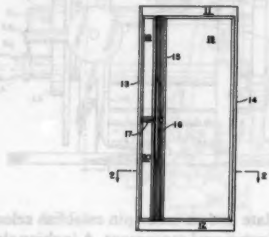
Felix B. Romberg, P.O. Box 218, Holland, Tex.

Filed Jan. 15, 1971, Ser. No. 106,807
Int. Cl. E05f *13/00*
U.S. Cl. 49—272 **6 Claims**



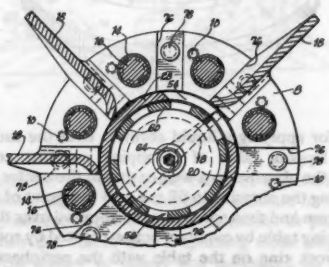
The specification discloses a rectangular gate normally latched at one end and including an initially stressed torsion bar spring horizontally disposed at the other end. When thrust from a vehicle is applied to the gate, the gate yields along the bottom while rotating along an upper horizontal axis, thereby storing energy in the bar spring and releasing the latch. Propelled by the spring stored energy, the released gate then springs about a vertical axis to an open position. The gate includes an improved vertical gate supporting post mechanism, an improved initially stressed torsion bar spring, a vehicle bumper contact device to eliminate scuffing of the vehicle bumper and an improved hooking mechanism to protect a unitary frame connection between the gate ends from additional wire tension.

3,683,555
DOOR
Raymond L. Kuniansky, Atlanta, Ga., assignor to Anaconda Aluminum Company, Louisville, Ky.
Filed Jan. 22, 1971, Ser. No. 108,722
Int. Cl. E06b 3/00
U.S. Cl. 49—503 3 Claims



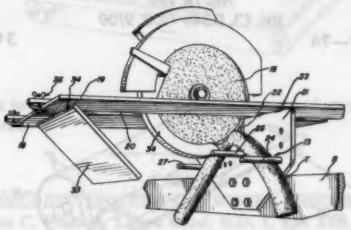
A door in which at least two panel members such as glass are supported by a metallic frame having parallel top and bottom rails, parallel strike, and hinge stiles and at least one intermediate vertical stile. Each of the stiles and rails includes opposed parallel surfaces joined by at least one web. The webs each have a glass stop supporting member. The glass stops are elongated members, preferably of extruded aluminum and are supported in parallel spaced relation to each other and form a panel receiving groove about the inside periphery of the rectangular spaces formed by the stiles and rails. A lock is mounted in an intermediate vertical stile and has cam operated rod members that extend, when actuated, through the respective rails for locking the door.

3,683,556
CENTRIFUGAL BLASTING WHEEL
Raymond M. Leliaert, 3612 Brentwood Drive, South Bend, Ind.
Filed April 13, 1970, Ser. No. 27,905
Int. Cl. B24c 3/00
U.S. Cl. 51—9 12 Claims



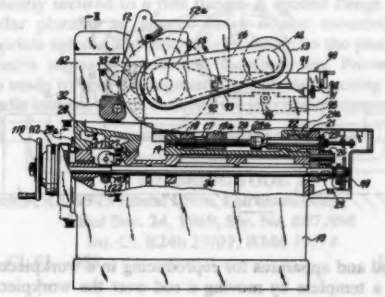
A centrifugal blasting wheel is disclosed which includes a rotating plate carrying spaced radially extending blades for propelling particulate treating material. The inner ends of the blades terminate short of the axis of rotation of the wheel to form a central opening. Impelling means rotating with the wheel receives particulate material from a source and imparts radial and tangential velocity components to it so that it is picked up by the faces of the blades and travels along those faces to be thrown from their ends. The blades are of such a size that when the impelling means is removed from the central opening a new blade may be inserted therein and moved radially outwardly to be mounted on the plate while a reverse action along the same path of movement may be used to remove old blades.

3,683,557
HOSE SAW
William A. Maples, Manitowoc, Wis., assignor to Imperial-Eastman Corporation
Filed Nov. 5, 1970, Ser. No. 87,257
Int. Cl. B24b 19/00, 23/00
U.S. Cl. 51—37 13 Claims



Apparatus for cutting flexible tubing such as hose by means of a hand tool having a rotary cutting wheel. The apparatus includes a slide plate and structure for guiding the hand tool, herein more specifically a circular saw, in a preselected path with the cutting wheel passing through the apex of an arcuately retained hose portion. The apparatus includes improved adjustable structure for holding different size hoses in the arcuate configuration for suitable cutting by the wheel.

3,683,558
GRINDING MACHINE
Kenzaburo Oishi, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan
Filed March 26, 1971, Ser. No. 128,386
Claims priority, application Japan, March 28, 1970, 45/26241
Int. Cl. B24b 5/16
U.S. Cl. 51—101 R 16 Claims



A grinding machine for grinding a workpiece having a plurality of portions thereon to be ground is provided having a first stop member for limiting the advancement of a grinding wheel head during rough grinding operations, a second stop member for limiting the advancement of the grinding wheel head during fine grinding operations, and a third stop member for limiting the retraction of the grinding wheel head during fine grinding operations to a point near the advancement limit thereof during the rough grinding operations. The machine is operative to successively roughly grind all of the plurality of portions of the workpiece, then to successively fine grind all of the roughly ground portions.

3,683,559

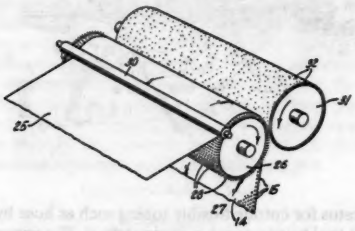
APPARATUS FOR PRODUCING PERFORATED SHEET MATERIAL

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson

Continuation-in-part of Ser. No. 713,691, March 18, 1968, abandoned, which is a division of Ser. No. 437,469, March 5, 1965, Pat. No. 3,408,776. This application Oct. 5, 1970, Ser. No. 78,189

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51—74 3 Claims



Apparatus for perforating sheet materials comprising a pair of rotatable rolls which form a nip. One roll has raised projections on its surface and the other roll has an abrading surface. The abrading surface roll has a greater surface linear speed than the other roll.

3,683,560

FORM COPYING METHOD AND APPARATUS

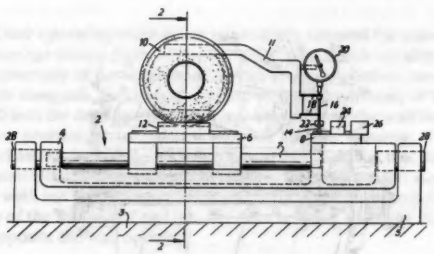
Bernard Fredrick Hallewell, Hillingdon, England, assignor to Toolmasters Limited, Hillingdon, England

Filed July 13, 1970, Ser. No. 54,221

Claims priority, application Great Britain, July 15, 1969, 35,667/69

Int. Cl. B24b 17/02

U.S. Cl. 51—100 R 12 Claims



Method and apparatus for reproducing in a workpiece the form of a template by moving a rod over the workpiece in unison with the movement of a topped stylus over the template and in which the stylus tip is cast in situ in a mould formed by the tool itself.

3,683,561

WORK-POSITIONING GRINDING FIXTURE

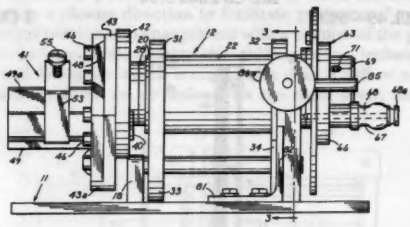
Buell Dunkin, 635 E. Amherst, Englewood, Colo.

Filed Nov. 4, 1970, Ser. No. 86,891

Int. Cl. B24b 3/22

U.S. Cl. 51—121 13 Claims

A grinding fixture includes a base and a work support assembly including a rotary shaft mounted on the base to swing from side to side transverse to the axis of the shaft. A work holder on the end of the shaft releasably grips the work and radial relief grind structure includes a circular index plate rotatable relative to the shaft having a peripheral cam slot with an eccentric cam surface which slidably engages a cam follower pin for radial relief grinding. Circumferentially spaced



index holes in the plate and an index pin establish selected angular increments of rotational movement. A locking slot in the index plate cooperates with the same cam follower pin for locking the shaft against rotational movement for other grinding procedures.

3,683,562

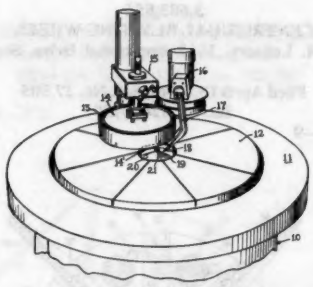
MEANS FOR APPLYING A LIQUID ABRASIVE OVER THE SURFACE OF A ROTATABLE LAPPING TABLE OF A LAPPING MACHINE

Lawrence Day, Chicago, Ill., assignor to Spitfire Tool & Machine Co., Inc., Chicago, Ill.

Filed Sept. 24, 1970, Ser. No. 75,046

Int. Cl. B24b 37/09

U.S. Cl. 51—131 6 Claims



Means for applying a liquid abrasive over the surface of a rotatable lapping table of a lapping machine comprising delivering the abrasive to a well or cup in the center of the table, allowing the abrasive to fill the well to a point of overflowing therefrom and then spreading the abrasive over the surface of the lapping table by capillary action created by rotation of a wear or work ring on the table with the peripheral portion overlapping the edge of the well in the path of overflowing abrasive from the well.

3,683,563

GUILLOTINE KNIFE SHARPENER

Walter Peter Moritz, 47 Cascade St., Paddington, New South Wales, Australia

Filed Aug. 6, 1970, Ser. No. 61,629

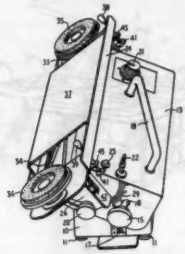
Claims priority, application Australia, Aug. 18, 1969, 59668/69

Int. Cl. B24b 3/36

U.S. Cl. 51—173 7 Claims

A device for sharpening the knife of a guillotine in which one or preferably two grinding wheels are driven by an electric

motor, the arrangement being mounted on a base which can be moved over the surface of a guillotine table, the grinding wheel or wheels being capable of being sset at an angle to the surface of the table corresponding to the angle at which the blade is to be sharpened. Sharpening is carried out simply by



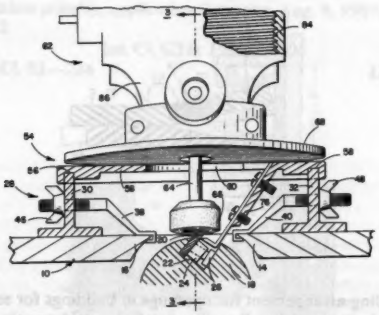
moving the device backwards and forwards along the length of the blade. It is to be preferred that the device is constructed in such a way that the grinding wheel or grinding wheels may be set either in a high position or a low position to enable the whole length of the guillotine blade to be sharpened.

3,683,564

MEANS FOR SHARPENING THE BLADE OF A JOINTER OR PLANER

Sheldon E. Lawrence, 2147 Walnut Ave., Marysville, Calif.

Filed Aug. 13, 1970, Ser. No. 63,575
Int. Cl. B24b *3/38*
U.S. Cl. 51—249 **1 Claim**



Apparatus for sharpening the blade of a jointer or planer without removing the blade, including a fixture having a track which is positioned on the bed of the jointer or planer and is aligned with the blade, and a spinning stone engaging the blade of the jointer or planer and supported on a member which rides the track, to sharpen the blade by sweeping the spinning stone along the blade.

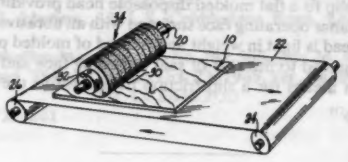
3,683,565

METHOD OF TREATING THE SURFACE OF TEXTURED CEMENTITIOUS SHEET

Norman Shirk Greiner, Somerville, and James Vincent Magee, South Orange, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 821,810, May 5, 1969, Pat. No. 3,616,103.
This application Nov. 2, 1970, Ser. No. 86,383
Int. Cl. B24b *1/00, 7/22*
U.S. Cl. 51—326 **9 Claims**

The textured surface of an asbestos-cement sheet covered with steam cure bloom or normal cure bloom is abraded in a particular manner to remove bloom from certain areas of the



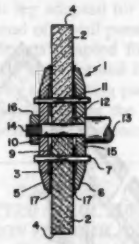
surface to produce a highly attractive simulated stone decorative sheet.

3,683,566

SEGMENTED GRINDING WHEEL ASSEMBLY

Klemens C. Walters, Logan Road, R.D. 1, Box 318, Gibsonia, Pa.

Filed Oct. 5, 1970, Ser. No. 77,896
Int. Cl. B24d *5/08, 5/10*
U.S. Cl. 51—356 **13 Claims**



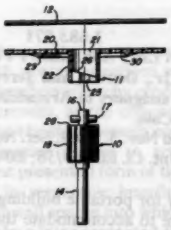
A grinding wheel for snagging operations having a plurality of pie-shaped abrasive segments forming a radially constant work surface with a small space between successive segments. In a preferred embodiment each segment has at least two spaced holes cooperating with a like number of pins permanently secured to a first flange. A second flange having a similar plurality of aligned holes is also mounted by appropriate spindle and mounting structure on the pins with the abrasive segments positioned therebetween. Provisions are also made to cool the segments by a coolant exiting from the spindle into the spaces between the successive segments.

3,683,567

FINISHING TOOL

Frank F. Ali, 2973 Pascal Drive, Fairborn, Ohio

Filed Dec. 24, 1969, Ser. No. 887,894
Int. Cl. B24b *23/02;* **B24d** *13/14*
U.S. Cl. 51—358 **13 Claims**



An abrasive tool employed for the grinding, polishing, and surface finishing of metal, plastic, rubber and other fabricating

materials. The device is particularly adapted for a quick mount to or release from a power driven head of chuck-like form. Embodiments are characterized by an adapter shaft to which is slip fit a flat molded disposable head providing a free flexing planar operating face surfaced with an abrasive material. The head is light in weight and formed of molded plastic to have projected to the rear of said operating face and integral therewith means for a slip friction fit thereof to the adapter shaft.

3,683,568

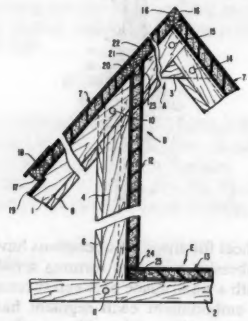
Patent Not Issued For This Number

3,683,569

STRUCTURAL CONNECTIONS FOR BUILDING CONSTRUCTIONS

Burton J. Holm, 822 3rd. Ave. Apt. 303, Excelsior, Minn.

Filed June 9, 1970, Ser. No. 44,796
Int. Cl. E04b 7/02; E04h 1/02
U.S. Cl. 52—93 32 Claims



Structural connections for the construction of buildings which provide interlocking sandwich wall and roof sections that are self-insulating and self-leveling. In addition, channel baseboards are provided which permit wiring after complete construction of the building. An interlocking beam and post assembly with an offset tongue portion allows two or more beams, joists or posts to be joined.

3,683,570

Patent Not Issued For This Number

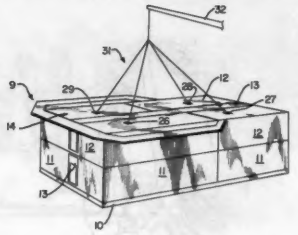
3,683,571

BUILT-IN LIFT ASSEMBLY FOR BUILDING

Frank C. Walz, Jr., Denver, and Jerry B. Davis, Lakewood, both of Colo., assignors to Armadillo Manufacturing Company, Denver, Colo.

Filed Nov. 3, 1969, Ser. No. 874,091
Int. Cl. E04b 5/58; E04h 1/12
U.S. Cl. 52—125 11 Claims

A lift assembly for portable buildings is integrated into the building structure to accommodate the lifting and relocation of the building. The lift assembly includes upright lift members secured at selected locations inside the building having upper connector portions defining plural spaced lift stations accessible through the top of the building together with an internal spreader frame arranged between the lift members formed as an integral part of the roof to distribute the lifting forces. Each



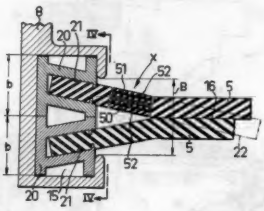
lift member preferably extends to the base of the building and is rigidly anchored thereto.

3,683,572

SEALING DEVICE FOR OPENINGS IN BUILDINGS

Kurt Alten, Ringstr. 14, 3015 Wennigsen am Deister, Germany

Filed April 28, 1970, Ser. No. 32,603
Int. Cl. E06b 7/23
U.S. Cl. 52—173 12 Claims



A sealing arrangement for openings in buildings for sealing the gap between the wall portions defining said opening and an object in or in front of said opening, which includes a plurality of substantially parallel flexible elastic strips located in at least one plane substantially parallel to the plane defined by said opening and adapted to yield and sealingly engage an object moved into or toward said opening.

3,683,573

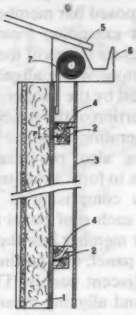
PROCESS FOR COVERING BUILDINGS, PARTICULARLY DWELLINGS, AND THE DWELLINGS OBTAINED BY APPLICATION OF THIS OR A SIMILAR PROCESS

Hubert Michel Henri Payraudeau, and Henri Andre Charles Payraudeau, both of Les Brouzils, France, assignors to Technab, Les Brouzils (Vendee), France

Filed June 10, 1970, Ser. No. 44,950
Int. Cl. E04h 1/00
U.S. Cl. 52—235 5 Claims

This invention relates to a process for covering dwellings in which the main walls comprise projecting elements onto which various shaped shells corresponding to the required

style of construction can be hooked, these shells being bolted down by the elements forming the roofing, and replaceable at



will by different shaped shells which alter the general appearance of the building.

3,683,574

CYLINDRICAL TANK FOR CONTAINING HIGH-PRESSURE FLUIDS

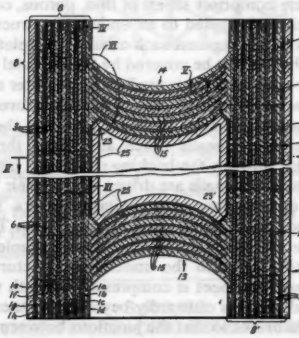
Franz Vaessen, Essen-Bredeney, Germany, assignor to Hocktief AG fur Hoch-und Tiefbauten vorm. Gebr. Helfmann, Essen, Germany

Filed May 18, 1970, Ser. No. 38,212

Claims priority, application Germany, Aug. 9, 1969, P 19 40 726.2

Int. Cl. G21c *13/04, 13/08*

U.S. Cl. 52—224 **12 Claims**



A tank designed to contain high-pressure fluid, e.g. in a nuclear reactor, has a peripheral wall composed of concentrically nested concrete shells individually prestressed by surrounding wire coils; the several shells are separated by interposed antifriction layers preventing the transmission of substantial shear stresses therebetween. The top and bottom of the tank are formed by nested incurved concrete bowls, separated by antifriction layers, bearing upon stepped annular shoulders in an upper and a lower annular header secured by vertical tension cables to the peripheral wall.

3,683,575

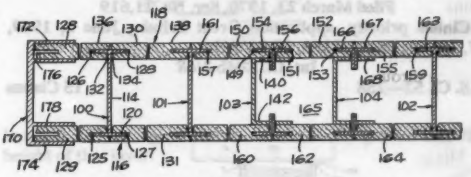
WALL STRUCTURE AND METHOD OF INSTALLING SAME

Walter G. Meziere, 1221 S. Cobblestone Road, La Habra, Calif.

Continuation-in-part of Ser. No. 747,305, July 24, 1968, abandoned. This application Oct. 23, 1969, Ser. No. 871,470

Int. Cl. E04b *2/30*

U.S. Cl. 52—241 **4 Claims**



A wall structure adapted for installation between floor and ceiling structures of a building. The wall includes ceiling and floor tracks with a plurality of vertical stud members located therebetween. Connector members are provided with each connector having a first leg adapted for being engaged in an end slot formed in the end of a wall panel, and with a second leg having hooked elements adapted for engaging the stud members through vertical slots formed in the stud members. The wall is constructed by connecting panels to adjacent stud members with access panels having the connector members releasably fastening panels to the stud members.

3,683,576

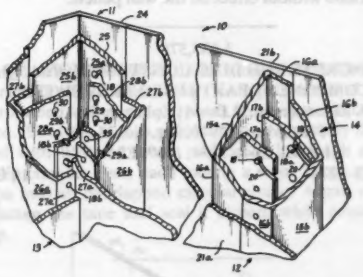
PLATE CONNECTED STRUCTURAL MEMBER CONSTRUCTION FOR BUILDING WALLS

John Sikes, 8535 Findlay, Houston, Tex.

Continuation-in-part of Ser. No. 697,672, Jan. 15, 1968, abandoned, Continuation-in-part of Ser. No. 882,995, Dec. 8, 1969. This application Jan. 19, 1971, Ser. No. 107,799

Int. Cl. E04b *1/348, 1/40*

U.S. Cl. 52—250 **9 Claims**



The invention discloses channel members, as the broadest common element, with various adaptions made with relation to, or in the channel members whereby other members may be latchable engaged therewith, as the channels are in place in wall constructions, whereby the channels may segregate building corner or wall section spaces to receive reenforcing concrete therein. A first presented form of the invention relied upon slots and pins in respective interfitting members to segregate the corner or wall spaces into which the reenforcing concrete was poured. In a later presented form of the invention reliance was made upon inter-fitting teeth, with flexibility of tooth engagement being accomplished by making one tooth forming member of plastic with enough resilience to give amply to permit teeth interfitment. In a preferred form of the

invention, now presented the members to be interfitted provide respectively vertically disposed holes in one member, as the channel, to receive therethrough latch providing extensions which are spring urged into latching position after passing through the aforesaid holes.

3,683,577

BUILDING CONSTRUCTION SYSTEMS

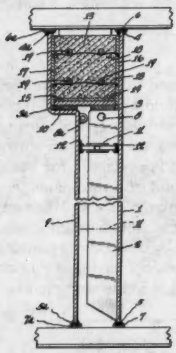
William B. Spillman, Miami, Fla., assignor to Seaferro, Inc., Miami, Fla.

Filed March 23, 1970, Ser. No. 21,619

Claims priority, application Great Britain, June 2, 1969, 27,790/69; Dec. 3, 1969, 58,987/69

Int. Cl. E04b *2/68*

U.S. Cl. 52—258 15 Claims



A building system characterized in that the main and auxiliary reinforced concrete beams and columns are cast in place using the wall panels as physical shuttering forms but having no actual contact with the concrete. The wall panels are separated from the concrete beams and columns by insulating liners, and load isolating cushions are provided between the panels and the concrete beams and columns to allow considerable latitude of thermal and load strain movement of the building frame without effect on the wall panels.

3,683,578

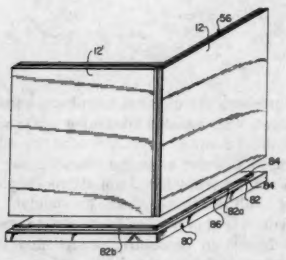
CONCRETE BUILDING CONSTRUCTION AND COMPONENT PARTS USED THEREWITH

Harold M. Zimmerman, R.D. #1, Ephrata, Pa.

Filed May 7, 1970, Ser. No. 35,358

Int. Cl. E04b *1/04, 1/40;* E04c *1/10*

U.S. Cl. 52—274 10 Claims



There is disclosed a concrete building arrangement wherein the walls and roof are formed by insulated concrete panels. The wall panels are aligned by cooperating guide means on the base of the panels and on the foundation with which the panels cooperate. The panels preferably comprise outer concrete layers with an insulating layer sandwiched therebetween, and also preferably incorporate reinforcing frame means having segments extending transversely between respective layers. Moreover, securing means are provided which preferably include at least one exposed bar member carried by each panel and anchoring arms extending from the bar member into respective outer concrete layers of the panel for anchoring the bar member in position. While alignment at the base of the wall panels is provided by the cooperating guide means, alignment at the upper portion of the panels is preferably achieved by bolt means cooperating with the bar members. Modified securing means are also provided for joining together edgewise roof panels to form a roof unit, the roof panel securing means similarly comprising at least one exposed bar member carried by each roof panel and anchoring arms extending from the bar member into the outer concrete layer of the respective roof panel, and bolting means connecting the bar members of adjacent panels. The overall building, the cooperating guide and aligning means, the securing devices and the reinforcing frames individually and separately constitute parts of the invention.

3,683,579

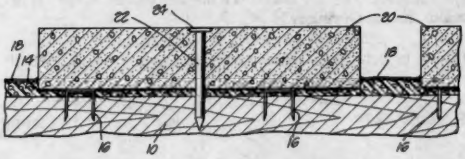
ARTIFICIAL STONE FACING CONSTRUCTION AND METHOD THEREFOR

Jack M. Beardsley, 1961 Bellevue Drive, Glendale, Calif.

Filed Aug. 27, 1970, Ser. No. 67,515

Int. Cl. E04f *13/14*

U.S. Cl. 52—311 16 Claims



The disclosure comprises sheets of thin, porous, compressible backing material stapled to an underlying structure. The backing sheets butt up against each other to completely cover the surfaces which are to be covered by the artificial bricks. A coat of mortar-colored paint is applied to the outer surface of the backing sheets. While the coat of mortar-colored paint is still wet, imitation bricks are secured in rows to the backing sheet by nails with T-heads which are driven through the imitation bricks, through the backing sheet, and into the underlying structure. The nails are driven so that their heads are flush with the outer surface of the imitation bricks. The heads of the nails are covered with brick colored paint. The imitation bricks are spaced so that they cover the staples used to hold the backing sheet to the underlying structure. In this manner, the backing sheet is compressed beneath the imitation bricks and projects outwardly beyond the inner surfaces of the imitation bricks so that the junctions between the inner surfaces of the imitation bricks of the backing sheet are concealed, thus creating the appearance of real bricks set into real mortar.

3,683,580

COMPOSITE END CONNECTION FOR STEEL JOISTS

Ira J. McManus, 39 Lincoln Ave., Florham Park, N.J.

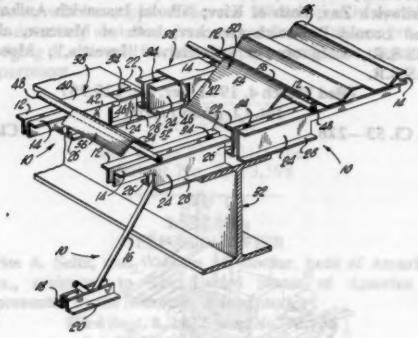
Filed Oct. 8, 1970, Ser. No. 79,022

Int. Cl. E04b *1/16, 5/29*

U.S. Cl. 52—334 8 Claims

A joist end connection providing composite action between a supporting beam and a concrete slab when the bearing end of the joist is encased in the concrete slab whereby the en-

cased joist end is employed as a shear connector. This is accomplished by employing metal formwork and anchoring



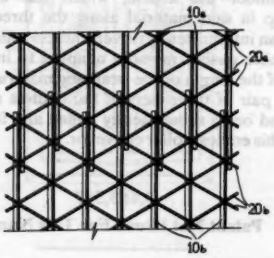
means for keying the supporting beam to the concrete at the bearing end of the joist.

3,683,581

PREFABRICATED FRAME

Yaichi Yamaso, 3,-6-chome, Miyakojima Hondori, Miyakojimaku, Osaka, Japan

Filed Jan. 27, 1969, Ser. No. 794,037
Int. Cl. E04c 2/42, 5/04
U.S. Cl. 52—666 **4 Claims**



Prefabricated frame of truss grating type for structural uses comprising a plurality of straight longitudinal members usually made of shape steel and a plurality of zigzag lateral members usually made of band steel, the latter of which run parallel to each other but in abutting relation at the zigzag bents and engage with the former in firmly inserted relation in recesses provided along each longitudinal member.

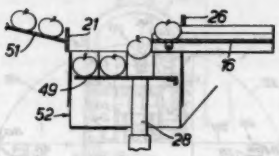
3,683,582

METHOD FOR LOADING CONTAINERS WITH ARTICLES

Albert Charles Edward Seguin, Great Buckland, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,164
Int. Cl. B65b 35/30, 5/10
U.S. Cl. 53—26 **1 Claim**

In the loading of a container with two or more layers of articles which are fragile or susceptible to damage such as apples, the articles to be loaded in each layer are arranged in turn on a platform immediately above the container. The platform is movable to cause the articles to fall from the trailing edge of the platform as it uncovers the container and support means within the container is disposed a distance, substantially equal to the height of the layer, below the platform as the first layer is loaded. The support means is lowered in increments as each layer is lowered so that the articles in each layer are not allowed to fall through a distance substantially greater than the height of that layer.

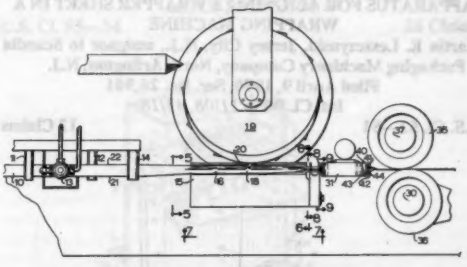


3,683,583

APPARATUS AND METHOD FOR MAKING SEED TAPE AND THE RESULTING SEED TAPE

Troy Lee Cochran, and Melvin Douglas Kirkpatrick, both of Salinas, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,301
Int. Cl. B65b 9/06
U.S. Cl. 53—28 **4 Claims**



A single strip passes while under tension and with a portion moistened through a generally V-shaped mandrel channel with a rounded lower end, and seeds are dropped into place on the tape. Then the tape is guided along a gradually deepened channel with widened lower portion and through a pair of generally circular eyes, each having a step. These eyes form the tape into an overlapped circular shape. A pair of rollers then flatten the tape and seal it closed, while retaining the overlap.

3,683,584

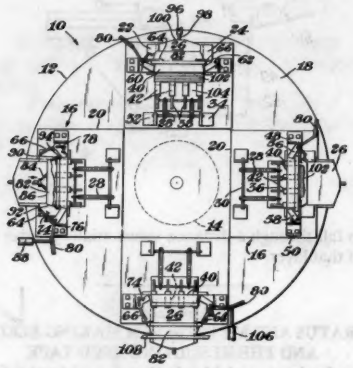
LOADING METHOD AND APPARATUS

Ruben A. Tigner, 3157 S. W. Riverview Drive, Bay City, Mich., assignor to Dow Chemical Company, Midland, Mich.

Filed July 23, 1970, Ser. No. 57,708
Int. Cl. B65b 5/06, 39/14
U.S. Cl. 53—35 **15 Claims**

Method and apparatus for automatically loading luncheon meat, cheese and like products into preformed container parts. In practicing the invention the container part is inverted, and the product lifted upwardly and pressed into the part. The loaded part is then rotated approximately 180° and released such as onto a conveyor system for delivery for further package assembling. Precise control and positioning of the product is maintained through all phases of loading. In ad-

dition, such a loading method and apparatus is readily adapted to be fully automated, if desired, and can load at speeds "in



line" with high speed package assembling apparatus, vacuumizing stations, sealing stations, etc.

3,683,585

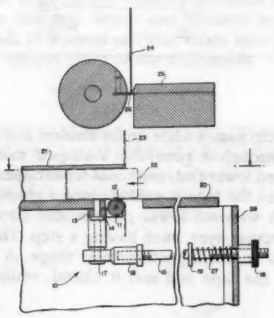
APPARATUS FOR ALIGNING A WRAPPER SHEET IN A WRAPPING MACHINE

Martin E. Leszczynski, Jersey City, N.J., assignor to Scandia Packaging Machinery Company, North Arlington, N.J.

Filed April 9, 1970, Ser. No. 26,941

Int. Cl. B65b *11/08, 41/18*

U.S. Cl. 53—51 **12 Claims**



A method and apparatus for wrapping a package or article with a wrapper sheet. A package is moved through a wrapper sheet in such a manner as to have the wrapping material extend across the advanced end of the package and two opposite sides thereof. The wrapper sheet is shifted in its placed position on the package to effect the desired alignment thereof with respect to the package. In the apparatus of this invention, specific means are provided to effect the desired method steps. In a specific embodiment of this invention a roller member is disposed in the wrapping machine to frictionally grip the wrapper sheet after the sheet has been placed onto the package. The manner in which the wrapper sheet is gripped by the roller member will cause the sheet to shift position on the package as desired.

3,683,586

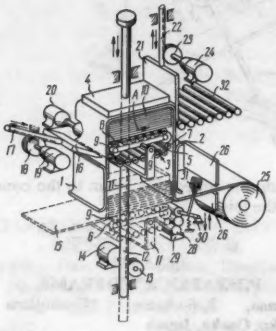
APPARATUS FOR WRAPPING ARTICLES WITH WRAPPING MATERIAL

Yakov Efimovich Duckhinsky, Kiev; Grigory Avramovich Radutsky, Moscow; Rafail Efimovich Kheifets; Grigory Iosifovich Zax, both of Kiev; Nikolai Ivanovich Anikanov, and Leonid Pavlovich Grachev, both of Moscow, all of U.S.S.R., assignors to Izdatelstvo "Izvestia,", Moscow, U.S.S.R.

Filed March 4, 1971, Ser. No. 120,957

Int. Cl. B65b *11/20*

U.S. Cl. 53—228 **2 Claims**



An apparatus for wrapping articles with wrapping material, wherein means for folding the free ends of the wrapping materials under the article, which has been previously wrapped up in said material along the three sides thereof, comprises an intermittently driven endless roller conveyor and a reciprocable pusher member adapted to insert one of the free ends of the length of the wrapping material into the space between a pair of the rollers of the endless roller conveyor, this free end being subsequently pulled and folded under the article by this endless roller conveyor.

3,683,587

Patent Not Issued For This Number

3,683,588

ENTRAINING MEANS FOR THE CROWN CORKS USED IN CONNECTION WITH BOTTLE CLOSING MACHINES

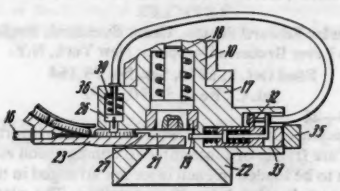
Egon Ahlers, Bad Kreuznach, Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Germany

Filed Aug. 3, 1970, Ser. No. 60,530

Claims priority, application Germany, Aug. 4, 1969, P 19 39 545.0

Int. Cl. B65b *57/00, 7/28*

U.S. Cl. 53—64 **12 Claims**



An apparatus for applying closures, such as crown closures, to vessels and includes a rotary conveyor for receiving vessels at one point and closures at another point and for discharging

vessels with closures thereon at still another point. The apparatus includes means to dislodge closures from a supply point to compartments on the conveyor and, further, includes a detecting device for detecting the presence of a closure in a compartment as the compartment approaches the point where a closure will be supplied thereto. The device is operable, when detecting a closure in a compartment, to prevent the dislodging of a closure from the supply point for the respective compartment.

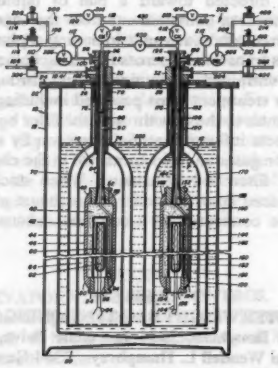
ERRATUM

For Class 53—331.5 see:
Patent No. 3,683,598

3,683,589
HELIUM PURIFIER

Charles A. Seitz, and Winston M. Bodine, both of Amarillo, Tex., assignors to The United States of America as represented by the Secretary of the Interior

Filed Sept. 8, 1970, Ser. No. 70,136
Int. Cl. B01d *53/04*; F25z *3/00*
U.S. Cl. 55—62 **10 Claims**



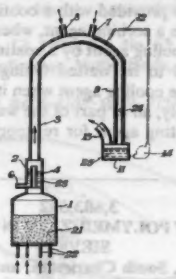
A continuous production and delivery of ultrapure helium involving dual adsorption columns is characterized by a helium purifying operation in one of the columns concurrently with preparation for such operation in the other column by regeneration and pressurization of the adsorbent. A pair of the helium product is utilized upon delivery from one column to purge impurities from the other column and pressurize its adsorbent. Continuous cycling of the sequence of helium purification alternating with an application of heat, together with a restricted flow of purging helium for column regeneration and pressurization, is coordinate for the respective columns by operation of a time regulated program control.

3,683,590
DUAL FLUE CONDENSER

Wendell E. Dunn, Jr., 12 Trelawney St., Woollahra, Australia
Continuation-in-part of Ser. No. 138,462, April 29, 1971. This application April 29, 1971, Ser. No. 138,468

Int. Cl. B01d *53/00, 34/00*
U.S. Cl. 55—71 **4 Claims**

Claimed is a process for condensing iron chlorides from a gaseous stream in two-steps, the first step being the cooling of the gases to about 675° C. to condense ferrous chloride as a liquid and leaving a gas ferrous residual and then in the second step adding chlorine gas and sodium chloride salt separately wherein the remaining $FeCl_2$ is oxidized to $FeCl_3$ which with the initial $FeCl_2$ is converted to $NaFeCl_4$ and cooling that product to a temperature above 159°C.

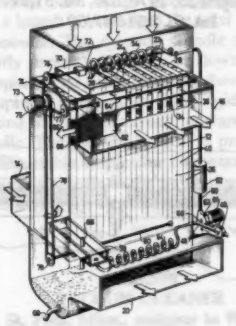


This process is useful for recovering iron chlorides from a gaseous effluent to minimize air pollution.

3,683,591
PROCESS OF DRYING AIR AND APPARATUS INTENDED THEREFOR

Ola Glav, Vallentuna, Sweden, assignor to Carl Georg Munters, Stocksund, Sweden

Filed July 6, 1970, Ser. No. 52,184
Claims priority, application Sweden, July 17, 1969, 10113/69
Int. Cl. B01d *53/06*
U.S. Cl. 55—34 **25 Claims**



In a process of conditioning air in a multi-channel system comprising a first group of channels passed by a cooling agent and a second group of channels disposed alternately therebetween and passed by the air to be conditioned and having its walls coated with a sorbing agent, the cooling agent removing the heat set free by absorption of moisture from the air to be conditioned by heat convection through the walls between the groups of channels, the cooling is to an essential degree effected by evaporation of water into the cooling agent passing through the channels of the first group of channels. Preferably, the process includes also a particular mode of regeneration of the sorbing agent by a heating fluid supplied intermittently to the channels of the first group and accumulated by the walls of said channels covered with a wettable or water absorbent material. The apparatus for carrying out a process of air conditioning according to the invention comprises an exchanger body housed in a casing and formed with two groups of channels, the channels of one group being positioning alternating with the channels of the second group, the channels of the first group being adapted to be passed by a cooling agent admitted through an inlet and discharged

through an outlet in the casing, and the channels of the second group being adapted to be passed by the air to be conditioned admitted through an inlet and discharged through an outlet in the casing. The walls of the channels to be passed by the air to be conditioned are provided with a coating of a hygroscopic substance acting as a sorbing agent, whereas the walls of the channels for the cooling agent by a coating of a sorbing agent are made adapted to be wetted taking up water which is evaporated into the cooling agent when it passes through said channels. Preferably, all or part of the water is supplied intermittently as a heating agent for regeneration of the sorbing agent.

3,683,592

INHIBITION OF POLYMERIZATION ON MOLECULAR SIEVES

Gerard R. Kamm, South Charleston, and Charles H. Young, Charleston, both of W. Va., assignors to Union Carbide Corporation

Filed Feb. 27, 1964, Ser. No. 347,672
Int. Cl. B01d *53/02*
U.S. Cl. 55—75 **44 Claims**

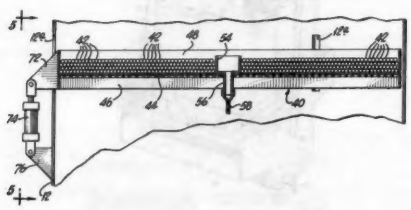
Molecular sieves are treated with organic compounds containing oxygen (in the form of a hydroxyl group or an ether linkage) to inhibit the ability of the molecular sieve to catalyze the polymerization of polymerizable unsaturated hydrocarbons, such as isobutylene, isoprene, butadiene, vinylacetylene and the like.

3,683,593

GAS SCRUBBER HAVING TILTABLE GRIDS AND METHOD OF USING

Roger E. Kent, Mount Prospect, Ill., assignor to National Dust Collector Corporation, Skokie, Ill.

Filed April 23, 1970, Ser. No. 31,227
Int. Cl. B01d *47/00*
U.S. Cl. 55—91 **15 Claims**



A gas scrubber comprising a housing having an inlet for contaminated gas adjacent the lower end and an outlet for cleansed gas adjacent the upper end. A filter bed extends across the housing intermediate the inlet and the outlet and the filter bed includes a supporting grid structure and a plurality of separate, movable, filter elements stacked several layers deep on the grid. Adjustable support means is provided for tilting the grid structure in the housing relative to the horizontal and control means is included for automatically adjusting said support means to change the angle of tilt, thereby effecting lateral displacement of said filter elements around said filter bed to provide self-cleaning of said elements.

ERRATUM

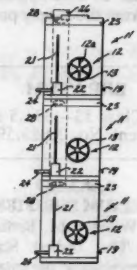
For Class 55—118 see:
Patent No. 3,683,587

3,683,594

MODULAR FUME SCRUBBER

Arthur C. Schouw, Rte. 1, Evart, Mich.

Filed Feb. 26, 1970, Ser. No. 14,355
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 **2 Claims**



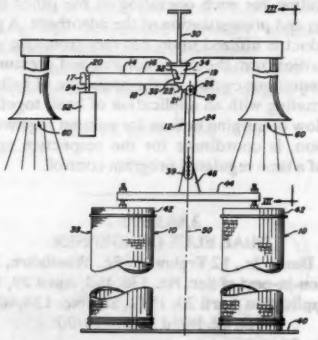
A fume scrubber or separator unit in a modular form adapted to be stacked vertically to multiply unit capacities and each unit including internally suspended blower means downwardly directed toward a pan of liquid or fluid to enhance removal of contaminants from the vapor or gases or mixtures thereof and each unit including a plurality of filter bed elements transversely across the rising column of gases or vapors and entrained contaminants and through which the materials for treatment must pass and including spray means directed counter to the flow through the filter bed. The blower element directs influent material downwardly against a fluid bed. Then the gases and/or vapors rise in the chamber to pass through the filter bed to exhaust. When stacked, adjacent units are spaced apart by collar-like exhaust plenums which may then be connected to a common exhaust manifold or stack.

3,683,595

COUNTERWEIGHT BAG TENSIONING DEVICE

Graham K. Houghton, 2844 Lawndale Drive, Los Angeles, Calif., and Wendell L. Humphreys, 2364 Ganesha Ave., Altadena, Calif.

Filed April 14, 1970, Ser. No. 28,359
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **11 Claims**

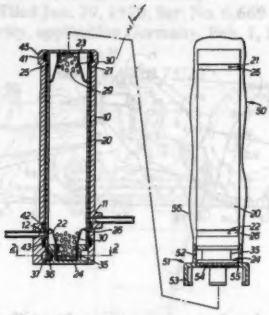


A bag tensioning device for use in a bag house and more particularly an improved counterweight and lever arm arrangement which maintains a dust collecting bag in equilibrium over a considerable range of total weight and with a relatively small vertical displacement of such a bag.

3,683,596
RECHARGEABLE GAS CLEANERS

Kenneth Ashley, Redditch, England, assignor to The Hymatic Engineering Company Limited, Redditch, England

Filed April 28, 1970, Ser. No. 32,655
Claims priority, application Great Britain, April 29, 1969, 21,738/69
Int. Cl. B01d 27/08
U.S. Cl. 55—359 1 Claim

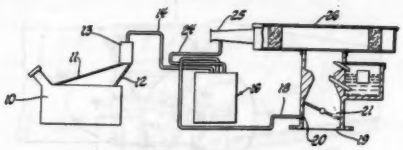


A rechargeable gas cleaner, sealed against contamination from its surroundings, comprises a cartridge in a cylindrical casing open at both ends and having inlet and outlet ports in its cylindrical wall communicating through ports in the cartridge with cleaning material in the cartridge. For replacement a fresh cartridge is enclosed in a storage capsule comprising a flexible plastic bag and a rigid head incorporating a readily breakable diaphragm. The head of the capsule is applied to the casing and the cartridge pushed by means of the flexible bag into the casing, breaking the diaphragm and pushing the old cartridge out, followed by the diaphragm.

3,683,597
EVAPORATION LOSS CONTROL

Thomas R. Beveridge, Spencerport, and Ernst L. Ranft, Webster, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 887,868, Dec. 24, 1969, abandoned. This application Sept. 17, 1970, Ser. No. 73,128
Int. Cl. B01d 50/00
U.S. Cl. 55—316 13 Claims

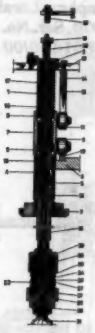


In a system for controlling the loss of fuel vapor from a vehicle fuel tank, the fuel tank vents are connected to the upper portion of a canister containing a quantity of fuel vapor adsorbing carbon retained under compression therein. The upper portion of the canister is also connected to the induction system of the vehicle engine, the bottom of the canister being open to atmosphere so that air is drawn through the carbon and the fuel vapor purged during engine operation. The canister is molded from nylon, the top being formed so that vapor from the fuel tank is discharged into the mid-portion of the canister. The top and bottom of the canister include molded grids and filter pads to prevent loss of carbon from the canister, and in one embodiment a nylon screen additionally serves to prevent carbon loss from the bottom of the canister. The top of the canister may contain appropriate valve structure to control fuel tank pressure and vapor flow.

3,683,598
CLOSING SPINDLE FOR BOTTLE SEALING AND OPENING MACHINES

Tonny Van Zijp, 10, Pieter Bothstraat, Leiden, Netherlands, assignor to N. V. Leidsche Apparatenfabrick, Leiden, Netherlands

Filed Aug. 13, 1970, Ser. No. 63,391
Claims priority, application Netherlands, Aug. 14, 1969, 6912392
Int. Cl. B67b 3/08; B65b 7/28
U.S. Cl. 53—331.5 7 Claims

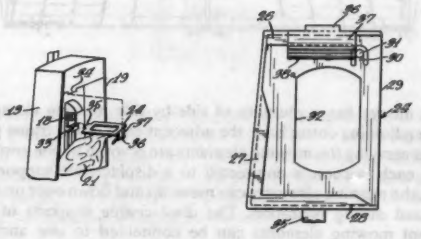


A closing spindle for a bottle sealing and opening machine, comprising a spindle rotating about a vertical shaft and being mounted in a bottle turn-table. The spindle has at its lower end a tightening chuck in which a cap fits tightly. The spindle is arranged to have a positively directed, vertical movement during rotation about the vertical shaft. An ejection spindle extends through a central bore of the closing spindle and is axially slidable with a length greater than the total length of the rotating closing spindle. The ejection spindle may be selectively held constantly pressed upwardly or downwardly relative to the rotating spindle. At some distance above the upper end of the ejection spindle a stop is provided rigidly mounted on the sealing machine to limit the vertical upward movement of the ejection spindle. The ejection spindle is provided at its lower end with an adjustable stop collar cooperating with the lower end of the rotating spindle in the tightening chuck to limit the vertical movement of the ejection spindle relative to the rotating spindle.

3,683,599
VACUUM CLEANER

Ute K. Malz, St. Paul, Minn., assignor to Whirlpool Corporation

Filed May 27, 1970, Ser. No. 40,851
Int. Cl. B01d 46/02
U.S. Cl. 55—376 4 Claims



A vacuum cleaner for separating dirt from a dirt laden air stream during a cleaning operation having an improved adapter plate releasably supporting a filter such as a disposa-

ble porous paper bag with the adapter plate having a pair of spaced catch members engaging catch retainers on the cleaner to retain the plate and thus the bag in position for filtering dirt laden air and with one of the catch members being on a resilient portion of the adapter so that the adapter and the attached bag may be inserted and removed by distortion of this resilient portion.

3,683,600

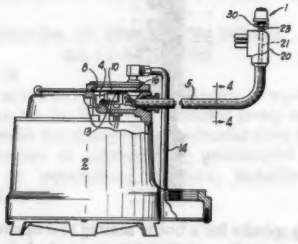
FILTER APPARATUS TO PROTECT A SWITCH CHAMBER AGAINST MOISTURE

Patricia A. Rice, North Olmsted, Ohio, assignor to The American Crucible Products Company, Lorain, Ohio

Filed June 3, 1970, Ser. No. 43,161

Int. Cl. B01d *50/00*

U.S. Cl. 55—385 **5 Claims**



The combination of a submersible sump pump, and the like, having a switch chamber with a breather tube extending therefrom and means for preventing moisture and water vapor from passing into the switch chamber through the breather tube as well as such means including a separable hollow body with inlet and outlet ports separated by means which is permeable to air, but not to moisture and water vapor.

3,683,601

MOWING MECHANISMS

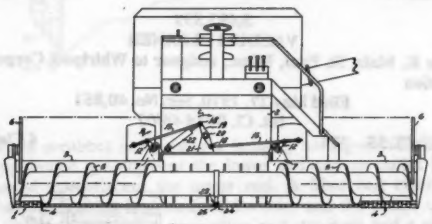
Cornelis Van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Feb. 27, 1970, Ser. No. 15,124

Claims priority, application Netherlands, March 5, 1969, 6903371

Int. Cl. A01d *75/30*

U.S. Cl. 56—6 **13 Claims**



A mower has a plurality of side-by-side mowing elements with adjoining cutter bars, the adjacent ends of the frame portions carrying the mowing elements are pivoted to one another and each portion is connected to a displaceable support so that the mowing elements can move up and down over uneven ground during operation. The displaceable supports of adjacent mowing elements can be connected to one another through a rocker so that the movements of one element affect the movements of the other. Also, a hydraulic system can be connected to the rocker and to one or both frame portions. The mower includes a conveyor and reel for each frame portion with an elevator between the portions.

3,683,602

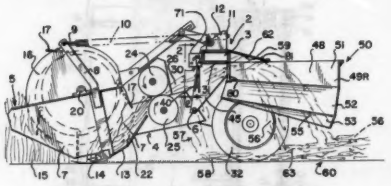
CROP AERATING MECHANISM FOR HARVESTERS

Thomas J. Scarnato, Barrington; Peter J. Peacock, Western Springs; George B. Cicci, Broadview; Paul W. Krage, Elmhurst, and John J. Kowalik, Glenview, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 16, 1970, Ser. No. 98,497

Int. Cl. A01d *43/10*

U.S. Cl. 56—14.4 **25 Claims**



A crop aerating device comprising a bar with spaced fingers positioned transversely of the side sheets of a windrowing mechanism for intercepting crops discharging from a pair of crop conditioning rolls, the fingers functioning to deflect some of the crops downwardly to form a first swath layer and allowing some of the crops to pass between the fingers while retarding the same so as to drop in a second layer on top of the first, some of the crops passing through passages between the ends of the aerating bar and the windrow side sheets which sheets are contoured at their rear ends to form pans which cause the crop thereon to slide and fold inwardly and form a third layer onto the second layer. A method of forming a swath by a multi-layer confluence of crops is also disclosed.

3,683,603

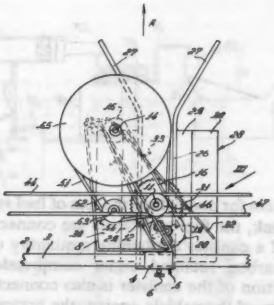
DEVICE FOR TOPPING TOBACCO PLANTS

Elwood Lee Smith, Elm City, N.C., assignor to The Lely Corporation, Wilson, N.C.

Filed June 15, 1970, Ser. No. 46,384

Int. Cl. A01d *45/02, 45/16*

U.S. Cl. 56—63 **12 Claims**



A plant topping device for connection to a tractor with a frame and one or more topping mechanisms, including a rotary cutter, being mounted on the frame. An endless feeder is mounted on pulleys adjacent the cutter to move tops towards the cutter to be cut. The endless member can be adjustably positioned relative to the cutter.

3,683,604

Patent Not Issued For This Number

3,683,605

RELEASABLE CUTTER PLATFORM FOR A SELF-PROPELLED COMBINE HARVESTER

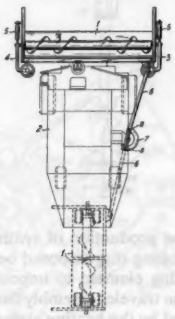
Wilhelm Jakobi, Saulgau-Bogenweiler, Germany, assignor to Josef Bautz GmbH, Saulgau, Germany

Filed Jan. 29, 1970, Ser. No. 6,669

Claims priority, application Germany, Feb. 1, 1969, P 19 05 035.2

Int. Cl. A01d *75/22*

U.S. Cl. 56—228 2 Claims



A cutter platform for a combine harvester in which the cutter platform is provided with its own wheels for transporting the cutter platform during travel over roads. The wheels of the cutter platform are movable to an inactive position when the cutter platform is in working position fastened to the front end of the combine harvester.

3,683,606

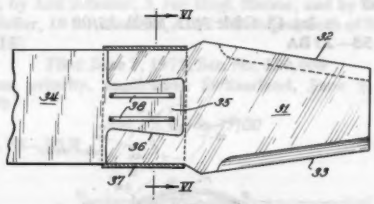
BLADE ASSEMBLY FOR ROTARY LAWN MOWER

Harvey C. Staines, R.R. 6, Box 1059, Battle Creek, Mich.

Filed Nov. 12, 1970, Ser. No. 88,753

Int. Cl. A01d *55/18*

U.S. Cl. 56—295 9 Claims



An arm and blade assembly for a rotary lawn mower is provided comprising an arm member defining a pair of arms, and a pair of blades, one affixed at the end of each arm, the blades being affixed to the arms by means of a keystone or dovetail joint providing restriction with respect to longitudinal and lateral movement, and a sleeve disposed over the joint providing restriction with regard to vertical movement, thereby providing a safe and positive means for readily affixing and detaching the blades to and from the arms.

ERRATUM

For Class 56—341 see:
Patent No. 3,684,026

3,683,607

NOVEL GUIDE ELEMENT FOR USE IN PRODUCING NOVELTY YARNS

Remy Chatin, Chavanoz, France, assignor to Moulinage Et Retorderie De Chavanoz, Chavanoz, France

Filed June 25, 1970, Ser. No. 49,815

Claims priority, application France, June 26, 1969, 6921891

Int. Cl. D02g *3/36*

U.S. Cl. 57—18 10 Claims

An improved guide element or "coronelle" for use in the production of novelty yarns and adapted to be placed on top of a hollow spindle, which comprises a one piece rigid element, having at least one orifice excentrically located with respect to the axis of rotation for the passage of thread, a crossbarring means, and a means for rotating the rigid element on the hollow shaft.

3,683,608

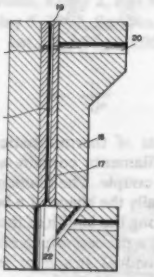
FLUID TEXTURIZING APPARATUS AND METHOD OF USE

Michel Buzano, 17, Chemin Chateau Gaillard 69, Villeurbanne, France

Filed April 30, 1970, Ser. No. 33,203

Int. Cl. D02g *1/04, 1/16*

U.S. Cl. 57—77.3 2 Claims



A texturizing apparatus comprising a yarn passage, at least one conduit for the delivery of fluid thereto which conduit feeds the yarn passage non-radially which is further chacacterized in that it presents a transverse cavity which cuts such yarn passage at a maximum to its axis and into which transverse cavity said fluid supply conduit empties.

3,683,609

Patent Not Issued For This Number

3,683,610
FANCY YARN, AND PROCESS AND DEVICE FOR PRODUCING IT

Michel Buzano, Villeurbanne, Rhone, France, assignor to Societe Rhodiaceta, Paris, France

Filed March 17, 1969, Ser. No. 814,465
Claims priority, application France, March 15, 1968, 68144238
Int. Cl. D01d 5/20; D02q 3/34
U.S. Cl. 57—140 J 5 Claims

Fancy yarns are made by subjecting yarns of a synthetic thermoplastic material, especially polyester yarns, to partial stretching, e.g. by a factor of 1.5–3.5, in contact with an aqueous lower alkanol or other crack-producing agent, followed by a heat relaxation treatment, the said or other heat treatment, or a supplementary stretch, being applied intermittently or to a continuously varying degree. The yarns obtained have a flake appearance and comprise alternating thick and thin portions, the diameters of the thick and thin portions both varying macroscopically, and the thick parts varying in diameter on the microscopic scale, the zones of smallest diameter corresponding to zones of highest crystallinity and orientation. The thin parts may vary in diameter microscopically in an analogous way but with smaller variations, or may be substantially uniform.

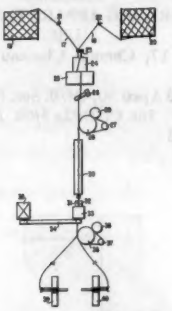
ERRATUM

For Class 57—140 J see:
Patent No. 3,683,610

3,683,611
PROCESS FOR PRODUCING A NOVEL TEXTURED YARN

Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France

Filed Nov. 20, 1969, Ser. No. 878,274
Int. Cl. D02g 1/02
U.S. Cl. 57—157 TS 2 Claims

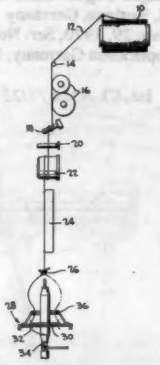


Continuous filaments of thermoplastic material are provided wherein such filaments contain a helicoidal curling and/or a residual twist couple. The filaments have a cross section which is substantially the shape of a bean, such cross section varying slightly along the length of the filaments. The filaments are produced by a process which comprises creating an initial twist in an individual strand or in an assembly of a number of strands having a high count per strand and a small number of strands per assembly; thermally treating the twisted strands or assembly of strands; blocking such twist at a point; and separating the single strand or assembly of strands at such point and winding them up. Such a process is characterized in that the point of separation of the yarn is located immediately at the outlet of the heat treatment yarns while the yarns are still in a plastic state. The apparatus necessary for carrying out such process comprises a delivery means for providing the yarn by unwinding, means for separating the strands or assembly of strands, means for initiating the twisting, means for heating the twisted yarn, and means for receiving the yarn. Such apparatus can additionally contain drawing means.

3,683,612
APPARATUS AND METHOD FOR PRODUCING SYNTHETIC TORQUE YARN

Michel Buzano, 17, Chemin Chateau Gaillard 69, Villeurbanne, France

Filed Dec. 4, 1970, Ser. No. 95,013
Int. Cl. D01h 7/52, 13/08
U.S. Cl. 57—34 R 10 Claims

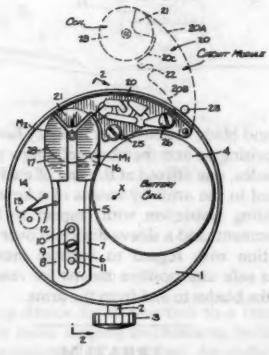


Apparatus for the production of synthetic torque yarn including a twist arresting ring disposed between a traveler assembly and a heating element to impound twists formed in yarn delivered to the traveler assembly from a supply such that the twists are heated by the heating element and such that the yarn is then wound on a spindle by the traveler assembly. A method for producing a synthetic torque yarn including the step of engaging yarn with a twist arresting ring disposed between a traveler assembly and a supply to impound twists in the yarn between the ring and the supply.

3,683,613
MINIATURIZED MOVEMENT FOR AN ELECTRONIC TIMEPIECE

Werner Richard Baumgartner, Orpund, Canton of Berne; Erich Walker, and Hans Peter Kaufmann, both of Bienne, Canton of Berne, all of Switzerland, assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,732
Claims priority, application Switzerland, Dec. 12, 1969, 18503/69
Int. Cl. G04c 3/02; H02k 33/00
U.S. Cl. 58—23 BA 7 Claims



A miniaturized movement for an electronic watch having a tuning-fork resonator which is sustained in vibration by an

electrodynamic transducer constituted by magnetic elements borne by the tines of the fork and a stationary coil disposed in the air gaps of the magnetic elements. The coil is mounted on a module having embedded therein the components of the electronic drive circuit associated with the coil, the coil being inserted in the air gaps through an entrance which makes it possible to assemble or disassemble the transducer without interfering with the tuning fork.

3,683,614

DAY CALENDAR TIMEPIECE WITH MULTIPLE LANGUAGE DISPLAYS

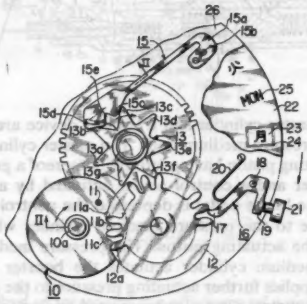
Katsuhiko Komiyama, 33-3, 6-chome, Nagasaki, Toshima-ku, Tokyo, Japan

Filed July 21, 1970, Ser. No. 56,828

Claims priority, application Japan, July 23, 1969, 44/69824

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **4 Claims**



The day dial of a calendar timepiece is provided with a plurality of language designations for each day. The jumper lever operating in in conjunction with the day star wheel is provided with two teeth have a circular pitch one half the circular pitch of the teeth on the day star wheel. A manual selection device is provided to shift the relative position of the jumper lever teeth relative to the teeth on the day star wheel thereby shifting the day dial to display a selected language.

3,683,615

TAMPER PROOF WATCH CASES

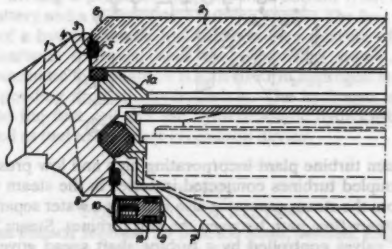
Ervin Piquerez, deceased, late of 2854 Bassecourt, Switzerland; by Ami Scholler, 3, rue Hugi, Bienne, and by Edouard Bandelier, 10 Neubadrain, 4102 Binningen, both of Switzerland (E)

Filed June 7, 1971, Ser. No. 150,408

Claims priority, application Switzerland, June 9, 1970, 8600/70

Int. Cl. G04b *37/00*

U.S. Cl. 58—88 R **7 Claims**



A watch case comprises a bezel frame to which a glass detachable only from the inside and a back cover are secured, and tamper-proof means comprising a small radial blind hole formed in said cover and engageable by means of a suitable tool, and a plug inserted to be engaged by a screw-threaded extraction rod, said plug being provided with a breakable cap covering said tapped hole and flush with the outer surface of the back cover.

3,683,616

ANTI-MAGNETIC TIMEKEEPING MECHANISMS

Samuel Steinemann, Liestal, and Lucien Levenberger, Waldenburg, both of Switzerland, assignors to Institut Dr. Ing Reinhard Straumann A.G., Waldenburg, Switzerland

Filed July 29, 1969, Ser. No. 860,132

Claims priority, application Switzerland, Aug. 19, 1968, 12466/68

Int. Cl. G04b *43/00*

U.S. Cl. 58—106.5 **12 Claims**

Time-keeping mechanism having magnetic operating parts but exhibiting truly non-magnetic properties. All parts of the mechanism that are mounted on the balance staff and the pallet arbor, the escapement wheel as well as at least the main portion of the balance staff are made of a material having a magnetic permeability of less than 1.01.

3,683,617

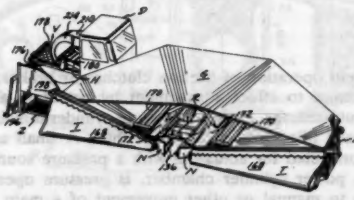
COMBINED TREE SHAKER AND FRUIT HARVESTER

Rolando Mario Vallicella, Route 2, Box 562, Bakersfield, Calif.

Filed May 5, 1971, Ser. No. 140,382

Int. Cl. A01g *19/06*

U.S. Cl. 56—329 **11 Claims**



A combined tree shaker and fruit harvester of such width as to be movable longitudinally in the spaces between trees having the trunks thereof arranged in rows. The harvester when moved to a position opposite a particular tree has a fruit deflector so supported thereon that the deflector extends under a portion of the branches of the tree.

The harvester also includes a transversely movable carriage that has power driven shaker means, a pair of conveyers and expandable deflector means mounted thereon. When the har-

vester is oppositely disposed to a tree, the carriage is moved transversely for the shaker means to removably engage the trunk thereof, and the deflector means then expanded to cooperate with the deflector on the harvester to provide a continuous surface that extends under the branch of the tree.

The deflector and deflector means cooperate to define a continuous surface of such configuration that as fruit fall thereon the fruit roll by gravity to the pair of carriage supported conveyers. The pair of carriage supported conveyers raise the fruit and deposit the latter on longitudinally extending conveyer means supported on the harvester. The conveyer means transport the fruit deposited thereon to a first end of the harvester, where the fruit drops therefrom by gravity, and may be alternately and selectively discharged into either of two containers that are removably supported from the harvester. The harvester may be operated continuously, for as one container is filled it is removed from the harvester and replaced by an empty container.

The carriage, conveyers and shaker move transversely as a unit relative to the wheel supported chassis that forms a part of the harvester, and the carriage when occupying a first position on the chassis is of such width as to permit the harvester to be moved on a highway from orchard to orchard.

3,683,618

FRICTION CLUTCH OR BRAKE SYSTEM

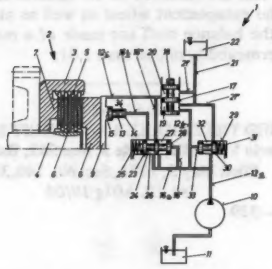
Willi Schacher, and Heinz-Jurgen Beck, both of c/o Patentburo, Zahnradfabrik, 7990 Friedrichshafen, Germany

Filed Jan. 19, 1971, Ser. No. 107,623

Claims priority, application Germany, Feb. 11, 1970, P 20 06 019.9

Int. Cl. F15b *15/18*

U.S. Cl. 60—52 R **9 Claims**



For rapid operation of friction clutches or brakes, where fluid pressure to effect engagement by actuating a power piston is utilized, the actuating pressure cylinder is maintained substantially filled with pressureless fluid. A small auxiliary piston connected for actuation with a pressure source, and with the power cylinder chamber, is pressure operated in response to manual or other movement of a main control valve to move in a direction to build pressure whereby the power piston is shifted into operative engagement with the plates of a clutch, for example. Subsequent to such initial movement of the power piston, the chamber is directly connected to the pressure source for power piston work actuation. Accordingly, operation is not dependent upon time consuming passage of fluid from a pump to the pressure cylinder in order to fill the chamber, but only to exert working pressure, thereby achieving rapid action of pressure operated devices.

3,683,619

BOOSTER SYSTEM

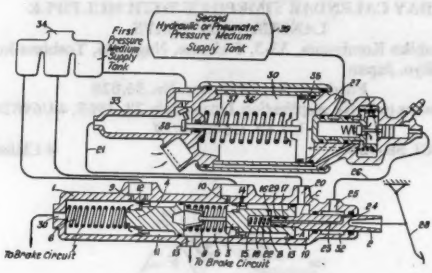
Juan Belart, Walldorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,556

Claims priority, application Germany, Jan. 31, 1970, P 20 04 502.7; Feb. 13, 1970, P 20 06 576.3

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.6 P **14 Claims**


Second Hydraulic or Pneumatic Pressure Medium Supply Tank
First Pressure Medium Supply Tank
To Brake Circuit
To Brake Circuit

A pressure master cylinder and a booster device are interconnected by pressure medium lines. The master cylinder includes an actuating piston having internally thereof a pressure medium cylinder and a control piston actuated by a brake pedal. When the brake pedal is depressed the control piston applies pressure to the pressure medium cylinder which in turn actuates the actuating piston. The pressure medium of the pressure medium cylinder actuates the booster device which in turn applies further actuating pressure to the actuating piston. The control piston is constructed so that failure in the booster device or the interconnecting pressure medium lines will enable the control piston to displace the actuating piston by physical contact to apply braking pressure to the one or more braking circuits connected to the master cylinder.

3,683,620

ARRANGEMENT FOR PROTECTING A STEAM TREATMENT DEVICE AGAINST EXCESS PRESSURE

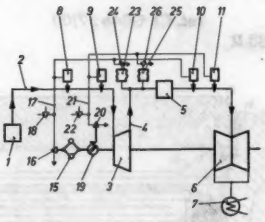
Cornelis Kalverboer, Nussbauman, Switzerland, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed Sept. 29, 1969, Ser. No. 861,613

Claims priority, application Switzerland, Oct. 14, 1968, 15316/68

Int. Cl. F01k *13/02*

U.S. Cl. 60—73 **2 Claims**



A steam turbine plant incorporating high and low pressure shaft coupled turbines connected in series in the steam flow path from the steam generator also includes a water separator in the steam flow path between the two turbines. Steam flow control valves controlled by a turbine shaft speed governor function to control the amount of steam going to the turbines, and safety shut-off valves controlled by a turbine shaft speed monitor function to shut-off the steam supply to the turbines

in the event the turbine shaft exceeds a predetermined safe speed limit. In order to avoid build-up of any dangerous steam over-pressure from arising within the water separator, steam pressure responsive devices are included which operate in conjunction with the speed responsive controls so as to also shut off the steam flow, thus providing a control system operating conjointly on two different parameters, namely, turbine shaft speed and steam pressure.

3,683,621

METHOD OF IMPROVING THE POWER CYCLE EFFICIENCY OF A STEAM TURBINE FOR SUPERCRITICAL STEAM CONDITIONS

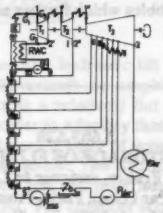
Robert Szewalski, Batorego Str. 19, Gdansk, Poland

Filed March 16, 1971, Ser. No. 124,756

Claims priority, application Poland, March 17, 1960, 139446

Int. Cl. F01k *7/32*

U.S. Cl. 60—73 **8 Claims**



A method of increasing the efficiency of a power cycle of a steam turbine at supercritical steam conditions comprises the steps of, first expanding the working medium at supercritical steam conditions to a pressure higher than the critical pressure and then dividing the working medium into first and second streams. The first stream is expanded in the turbine, with interstage reheating, and multi-stage regenerative feed water heating is effected by condensing extraction steam and cooling the second stream by heat exchange with the feed water preliminary heated by the regeneration extractions whereupon the second stream is mixed with the feed water and returned to the first expanding step to complete the cycle.

3,683,622

METHOD OF SUPPLYING A PROPULSION DEVICE WITH FUEL

Otto Von Krusenstierna, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 3, 1969, Ser. No. 863,505

Claims priority, application Sweden, Oct. 9, 1968, 13640/68

Int. Cl. F23k *5/00*; B63h *1/00*

U.S. Cl. 60—207 **5 Claims**

A propulsion system for a submarine includes an electric motor driving a propeller supplied with current from a fuel cell battery and a hydrocarbon burning engine. The fuel in the form of a hydroaromatic hydrocarbon or a mixture of such hydrocarbons is stored near the propulsion system. The hydroaromatic hydrocarbon is split to form hydrogen and the corresponding aromatic hydrocarbon. The hydrogen is supplied to the fuel cell and the hydroaromatic hydrocarbon is supplied as fuel to the other propulsion device.

3,683,623

FUEL CONTROL SYSTEM

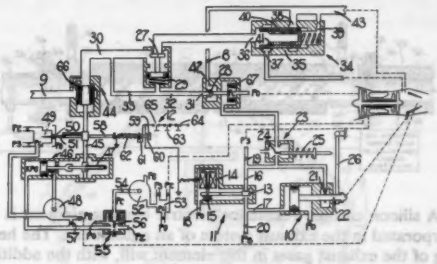
Graham Francis Johnson, 26 Bourton Road, Sollhull, England

Filed Oct. 28, 1970, Ser. No. 84,643

Int. Cl. F02k *1/18*

U.S. Cl. 60—235 **17 Claims**

A fuel control system for the reheat system of a gas turbine engine which has movable jet-pipe nozzles includes a nozzle position sensing means, a fuel shut-off valve which can be opened only when the nozzles are open and a throttle valve operated by a piston and cylinder unit is acted upon by pressures which are controlled by fluidic control devices and which are derived from air pressures at locations on the engine.



3,683,624

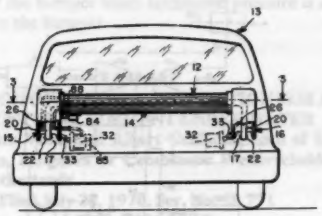
INTERNAL COMBUSTION ENGINE EXHAUST BURNER

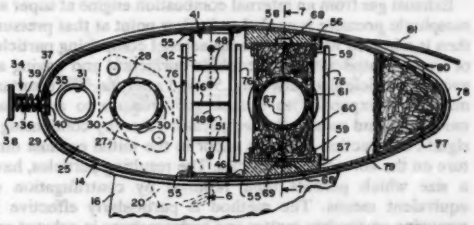
Theodore M. Williams, 847 Daytona Ave., Holly Hill, Fla.

Filed Sept. 29, 1970, Ser. No. 76,486

Int. Cl. F01n *3/14*; F02b *75/10*

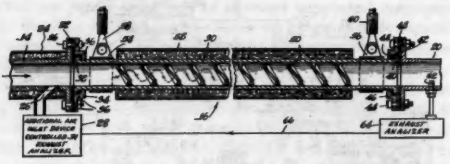
U.S. Cl. 60—275 **9 Claims**





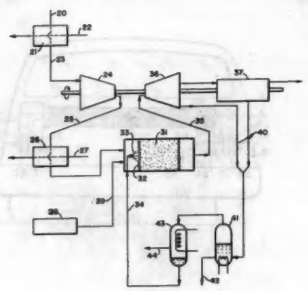
An anti-pollution device for use with the exhaust system of a motor vehicle and which is preferably mounted in an air foil above the rear deck of an automobile for electrically collecting and burning particles constituting combustion residue from the vehicle engine. Air is supplied to the air foil to provide sufficient oxygen to effect the complete burning of the exhaust residue. The clean and purified exhaust gases, after passing through a filter media, are discharged from the air foil across substantially its entire length and at an upward angle.

3,683,625
SMOG REDUCER
Edward J. McCrink, 75 E. Lake St., Northlake, Ill.
Filed May 25, 1970, Ser. No. 40,201
Int. Cl. F01n 3/14
U.S. Cl. 60—276 9 Claims



A silicon carbide resistance electric heating element is incorporated in the exhaust system of an automobile. The heating of the exhaust gases in this element will, with the addition of extra air, convert carbon monoxide in the exhaust to carbon dioxide. In a preferred form of the invention, an exhaust analyzer is connected to the exhaust system downstream from the heating element and controls an air auxiliary inlet to admit the proper amount of air to eliminate carbon monoxide.

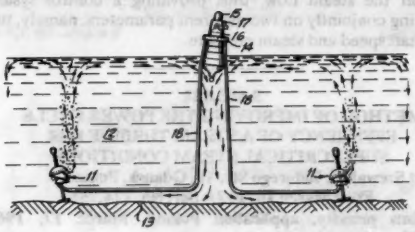
3,683,626
EXHAUST PURIFICATION
Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr. and William W. Wolbach, trustees of the Charles River Foundation
Filed Dec. 14, 1970, Ser. No. 97,913
Int. Cl. F01n 3/04; F02b 75/10
U.S. Cl. 60—279 11 Claims



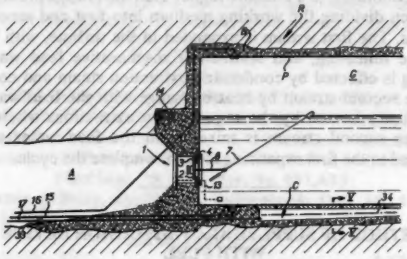
Exhaust gas from an internal combustion engine at super atmospheric pressure is cooled to its dew point at that pressure then is admixed with an aqueous aerosol comprising particles of water coated with an oleophilic surfactant and having an average particle size between 0.5 and 5 microns. The resultant mixture is expanded to reduce gas pressure to nearly atmospheric and reduce the temperature thereby condensing a significant fraction of water vapor in the initial exhaust mixture on the aerosolized particles. The resulting particles, have a size which permits their removal by centrifugation or equivalent means. The method is particularly effective in removing particulate matter and hydrocarbons in exhaust and can be used alone or in conjunction with means for removing nitrogen oxides.

3,683,627
INDUCED CONTROLLED UPWELLING
Barney Girden, 32 W. 76th St., New York, N.Y.
Filed May 28, 1970, Ser. No. 41,432
Int. Cl. E02b 3/00
U.S. Cl. 61—1 R 5 Claims

Improved means and method for upwelling or raising subsurface water to the surface of a body of water for manifold purposes. By dissolving air in the water and providing excess air, the water rises in a vertical current and is accelerated as the pressure on the water at various levels decreases toward the surface, causing the water to give off the dissolved air in a multitude of tiny bubbles which further accelerates the flow of water to the surface.



3,683,628
STORAGE OF FLUIDS
Jean Tabary, Paris, France, assignor to Lebon & Cie (Cie Centrale d Eclairage Par l Gas), Paris, France
Filed May 4, 1970, Ser. No. 34,028
Claims priority, application France, May 5, 1969, 6914203
Int. Cl. B65g 5/00; E21f 17/16
U.S. Cl. 61—.5 20 Claims

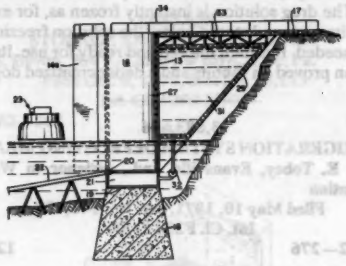


A reservoir for storing fluids, in particular petroleum products, in underground cavities, and a method for the construction of the reservoir ; the walls of the cavity are covered with mortar forming a rigid lining having a relatively smooth surface, sheets of flexible impermeable plastic material are secured to the lining by an adhesive and sealing joined to one another by a sealing compound to form a fluidtight skin. An interstitial layer is formed between the skin and the lining which is adapted to collect leaks from the reservoir or to collect subterranean water from the surrounding ; a gutter in the interstitial layer and a pipe in communication therewith are provided for removing and detecting leaks of the stored product or removing subterranean water from the interstitial layer. Other methods for testing the fluidtightness of the skin include : by sound, applying a vacuum to the interstitial layer and connecting the interior of the reservoir with the atmosphere ; visually forming the skin of transparent material wherein the adhesive is marked by the fluiding leaking from the reservoir ; and electrostatically, with a scanning device checking the dielectric continuity of the skin.

3,683,629
HYDRAULIC LIFT FOR AMPHIBIOUS CRAFT

Peter L. Paull, Weston, and Fontaine C. Armistead, Darien, both of Conn., assignors to Texaco Development Corporation, New York, N.Y.

Filed July 2, 1970, Ser. No. 51,876
Int. Cl. E02c 5/00
U.S. Cl. 61—8 1 Claim

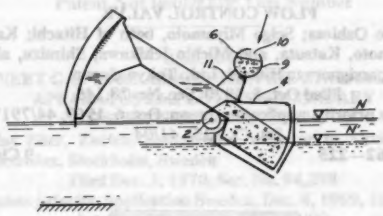


The invention relates to a hydraulic lift for use with transport vessels of the hovercraft or amphibious type which operate effectively across a relatively flat water or land surface. It relates in particular to a facility that is positioned as an intermediate stage between a body of water and a land mass disposed at widespread levels. The hydraulic lift includes a relatively upright, open top chamber adapted to receive a floating amphibious craft. The chamber is communicated with a source of liquid such as water, and means to controllably vary the level of the latter in the chamber such that the craft can be passed upwardly or downwardly to a desired level while being self-supported above the water's surface.

3,683,630
CONSTANT DOWNSTREAM LEVEL GATE

Philippe Alexandre, 17 Ter, route de Corenc, La Tronche, Isere, France

Filed Dec. 21, 1970, Ser. No. 100,046
Int. Cl. E02b 7/42
U.S. Cl. 61—25 4 Claims



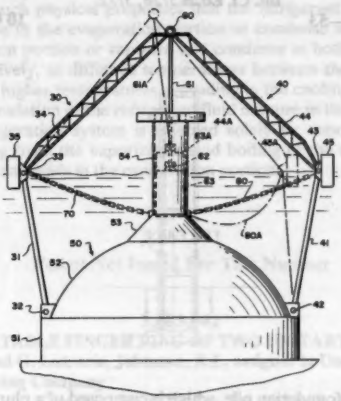
The control gate disclosed herein is provided with two ballast holding containers, one of which is a sector float centered on the axis of rotation of the gate and constructed to maintain a constant water level on the downstream side of the gate, the other container being located above the axis of rotation of the gate in one position of the gate.

3,683,631
DYNAMIC BOAT FENDERING SYSTEM

John Stanton McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 28, 1970, Ser. No. 84,762
Int. Cl. E02b 3/22
U.S. Cl. 61—46 3 Claims

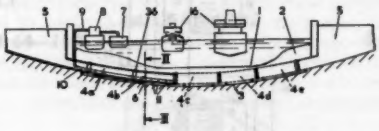
A dynamic fender for mooring ships having an elongated lower member joined at its lower end to one or more bodies attached to land above or below a sea and pivotally connected at its upper end to the lower end of an elongated upper member. The upper end of the elongated upper member is displaceably mounted to means above sea level which continually applies a compressive force to the elongated upper member. A bumper is joined at about sea level to either the lower member or upper member or both. A restraining means limits outward movement of the bumper and permits inward movement of the bumper when horizontal pressure is applied, as by a ship, to the bumper.



3,683,632
METHOD OF LAYING A FOUNDATION FOR A STRUCTURAL ELEMENT UNDER WATER

Romke van der Veen, and Albert Griffioen, both of Utrecht, Netherlands, assignors to Combinatie Wesierschelde v.o.f, Utrecht, Netherlands

Filed July 28, 1970, Ser. No. 58,771
Int. Cl. E02d 27/52
U.S. Cl. 61—50 11 Claims



Under a structural element and around a supply place a crater is made by laying a dike of foundation material in the space under the structural element and around the supply place and the space around said crater is subsequently filled up with foundation material by supplying suspension of foundation material with water into the crater and by causing it to flow over the edge of said crater. With this method the edge of the crater grows gradually so as to form a continuous layer of foundation material. The suspension of foundation material with water flowing over the edge of the crater is heavier than silt found around the crater resulting in the suspension driving the silt before it out of the space without being mixed with the silt.

3,683,633

METAL FOUNDATION PILE

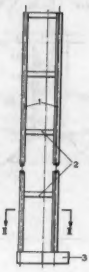
Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to N. V. tot Aanneming van Werken voorhen H. J. Nederhorst, Gouda, Netherlands

Filed July 6, 1970, Ser. No. 52,200

Claims priority, application Netherlands, July 10, 1969, 6910661; July 10, 1969, 6910665

Int. Cl. E02d *5/28, 5/72*

U.S. Cl. 61—53 10 Claims



A metal foundation pile, which is composed of a plurality of parallel metal bars, which are fixedly interconnected by metal cross-members and carry at least one pile shoe at the bottom thereof. The cross-members are spaced along the length of the bars and are driven into the earth with the bars when the piles are sunk in the ground.

3,683,634

PREFRACTIONATION WITH SUBSEQUENT RECOMBINATION IF FEED IN DOUBLE COLUMN RECTIFIER

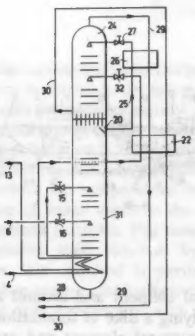
Martin Streich, Urseler Weg 44, Nieder-Eschbach, Germany

Filed Aug. 12, 1969, Ser. No. 849,439

Claims priority, application Germany, Aug. 24, 1968, P 17 94 019.1

Int. Cl. F25j *3/00, 3/02, 3/03*

U.S. Cl. 62—29 10 Claims



A portion of a pressurized gas mixture containing a component like carbon dioxide which solidifies during cooling is separated into a fraction substantially free of such component and a fraction enriched in such component. The remaining portion of the gas mixture and the two fractions are then fed to different levels of a fractionation zone with the fraction substantially free of such component entering at the highest level and the other fraction at the lowest level.

3,683,635

FREEZE STABILIZED INSULIN

Mario Campanelli, 77 Rosewood Drive, West Seneca, N.Y.

Continuation-in-part of Ser. No. 53,000, July 7, 1970, abandoned. This application Dec. 7, 1970, Ser. No. 95,983

Int. Cl. F25d *17/04*

U.S. Cl. 62—64 2 Claims

The present invention provides a process whereby the drug insulin can be stored for an indefinite period of time without any loss of its physical, chemical or pharmaceutical characteristics. The drug solution is instantly frozen as, for example, in liquid nitrogen, and stored below the solution freezing point until it is needed. It is then thawed and ready for use. Its efficacy has been proved on rabbits and a depancreatized dog.

3,683,636

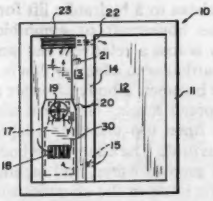
REFRIGERATION SYSTEM DEFROSTING MEANS

Raymond E. Tobey, Evansville, Ind., assignor to Whirlpool Corporation

Filed May 10, 1971, Ser. No. 141,478

Int. Cl. F25d *21/06*

U.S. Cl. 62—276 12 Claims



A vertically extending evaporator such as used in a side-by-side refrigerator-freezer having a U-shaped defrost heater including legs extending upwardly adjacent the opposite sides of the evaporator and a bight portion adjacent the bottom of the evaporator. The refrigeration fluid header is disposed adjacent the top of the evaporator and the bight portion of the defrost heater functions to melt ice accumulation in a drain pan disposed subjacent the evaporator.

3,683,637

FLOW CONTROL VALVE

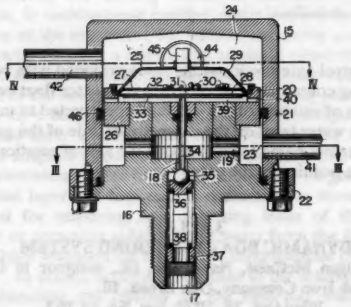
Ryoichiro Oshima; Seigo Miyamoto, both of Hitachi; Kazuo Kanemoto, Katsuta, and Michio Ichikawa, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1970, Ser. No. 78,145

Claims priority, application Japan, Oct. 6, 1969, 44/79172

Int. Cl. F25b *41/04*

U.S. Cl. 62—225 9 Claims



A flow control valve in which a part of a low pressure refrigerant passage connected to an evaporator in a refrigera-

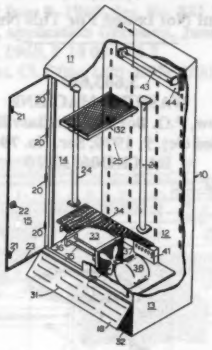
tion cycle is placed in a very closely spaced apart relation with a part of a high pressure refrigerant passage to the evaporator; a heat sensitive device having means for detecting the environmental temperature and means which is displaced in response to the detected temperature is so placed as to contact the temperature detecting means with refrigerant the low pressure refrigerant passage; and a flow control valve for controlling the flow in the high pressure refrigerant passage is operatively coupled to the heat sensitive member.

3,683,638

STORAGE AND DRYING CABINET

George S. Devon, 306 E. Lakeview Blvd., Erie, Pa.

Filed Oct. 5, 1970, Ser. No. 78,113
Int. Cl. F25d *23/00*
U.S. Cl. 62—264 6 Claims



This disclosure shows a drying and sterilizing cabinet especially suited for use in hospitals. The cabinet is sealed and has a dehumidifying chamber at its rear through which filtered air flows. Bacteria are killed by an arrangement of ultra-violet rays inside the cabinet.

3,683,639

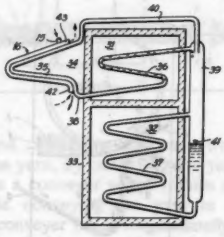
Patent Not Issued For This Number

3,683,640

INERT GAS TYPE ABSORPTION REFRIGERATION APPARATUS EMPLOYING SECONDARY REFRIGERATION SYSTEM

Nicolas Eber, Zurich, Switzerland, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 2, 1970, Ser. No. 94,298
Claims priority, application Sweden, Dec. 4, 1969, 16688/69
Int. Cl. F25b *15/10*; F25d *17/00*
U.S. Cl. 62—333 7 Claims



A cooling element of primary absorption refrigeration apparatus of the inert gas type has a temperature gradient in which the temperature progressively increases from a first temperature to a second higher temperature in an elongated path of flow in which refrigerant fluid evaporates in the presence of such gas. A secondary refrigeration system partly filled with a mixture of volatile liquids has an evaporation portion to abstract heat from the objective of cooling and a condensation portion which, along its length, is in thermal exchange relation with the cooling element. The mixture of volatile liquids forms a refrigerant fluid mixture which possesses such physical properties that the refrigerant fluids will vaporize in the evaporation portion or condense in the condensation portion or vaporize and condense in both portions, respectively, at different temperatures between the first and second higher temperatures prevailing in the cooling element. The circulation of the refrigerant fluid mixture in the secondary refrigeration system is effected solely by vapor bubbles resulting from the vaporization and boiling of the mixture of refrigerant fluids in the evaporation portion.

3,683,641

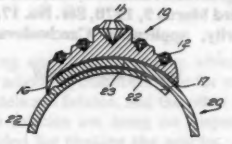
Patent Not Issued For This Number

3,683,642

ADJUSTABLE FINGER RING OF TWO UNITARY PIECES

Raymond G. Lutrario, Johnston, R.I., assignor to Uncas Manufacturing Company

Filed Dec. 30, 1970, Ser. No. 102,842
Int. Cl. A44c *9/02*
U.S. Cl. 63—15.45 3 Claims



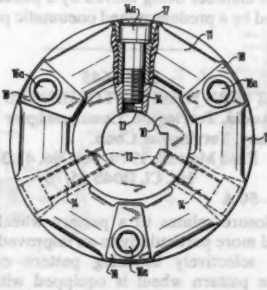
A finger ring having a cast ornamental setting mounted upon a simple wire shank which has a free end hidden beneath the setting, which free end may be moved to change the effective diameter within limits.

3,683,643

FLEXIBLE COUPLING

Gerhard Kirschey, Ittertaler Strasse 52, 56 Wuppertal-Vohwinkel, Germany

Filed April 13, 1971, Ser. No. 133,684
Claims priority, application Germany, April 23, 1970, P 20 19 608.1
Int. Cl. F16d *3/52*
U.S. Cl. 64—11 R 5 Claims



A flexible coupling for torque transmission, which comprises an annular coupling element of flexible material having

metallic bushings for the reception of securing screws and disposed between the input side and the output side of the coupling. The coupling element is mountable free from pretension by the securing screws directed alternately in radial and axial direction. A cylindrical armature sleeve is provided which constitutes one coupling part and is smooth and free of projections and recesses except threaded bores for the securing screws, as well as hold the securing screws disposed in radial direction. A flange hub constitutes another coupling part and is smooth and free of projections and recesses except threaded bores in the flange hub for the securing screws disposed in axial direction with a plane surface of a flange of the flange hub. The armature sleeve and the flange hub cooperate with each other. The elastic parts of the coupling have a pressure pretension by the securing screws disposed in radial direction. Metal bushings directed in radial, as well as in axial direction are provided and received within the cross-section configuration of the cross-section of the coupling element for the reception of the securing screws in the direction to its coupling-sided securing engagement face relative to the coupling element including columnar connecting members between the bushings secured in the other direction are disposed projectingly, and the coupling element has in its unmounted tension-free state the configuration of an irregular polygon.

3,683,644

CONTROL DEVICE FOR A TEXTILE MACHINE

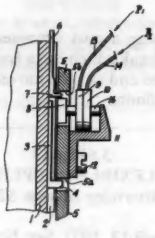
Bretislav Chvala; Jaroslav Janostik, both of Prague; Jindrich Mares, and Jan Jerabek, both of Trebic, all of Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed March 9, 1970, Ser. No. 17,785

Claims priority, application Czechoslovakia, March 12, 1969, 1777/69

Int. Cl. D04b *15/68*

U.S. Cl. 66—8 **4 Claims**



According to the present invention apparatus for the operation of such elements as the needle or jacks of knitting machines comprising a movable cam member adapted to be urged into and out of operative engagement with the butts of elements, the member being moved by a pneumatic activator selectively fed by a predetermined pneumatic pulse.

3,683,645

PATTERN WHEEL WITH HINGED JACK

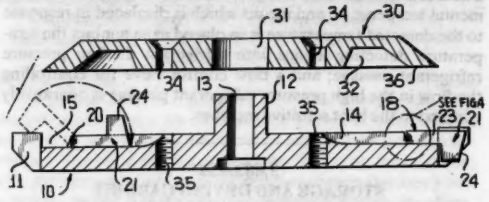
Samuel W. Audia, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed May 28, 1970, Ser. No. 41,389

Int. Cl. D04b *15/76*

U.S. Cl. 66—50 A **8 Claims**

This disclosure relates to a pattern wheel for a knitting machine and more particularly to an improved hinged jack assembly for selectively blocking pattern controlling slots thereof. The pattern wheel is equipped with a continuous hinge wire which is frictionally retained in place and on the hinge wire there is mounted a plurality of individually hingable jacks, each jack having a blocking portion which is adapted to be positioned within a pattern slot of the pattern wheel to block the same. The jacks have snap engagement with the



hinge wire and the need for a conventional hinge structure is eliminated.

3,683,646

Patent Not Issued For This Number

3,683,647

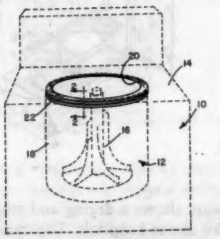
WASHING MACHINE

Chester L. Coshow, P.O. Box 149, Collinsville, Okla.

Filed Oct. 9, 1970, Ser. No. 79,519

Int. Cl. D06*f 37/20*

U.S. Cl. 68—23.2 **8 Claims**



A washing machine for washing clothes and having counterweight means for balancing the washing tub during a washing operation to preclude an unbalanced condition of the tub when the contents thereof are unevenly distributed therein. A plurality of weight members are mounted on the upper portion of the washing tub and are freely movable therearound for automatically compensating of any unbalanced load condition of the tub as the washing tub spins during a washing operation.

3,683,648

APPARATUS FOR COATING A MATERIAL LENGTH WITH A FLUID COATING SUBSTANCE

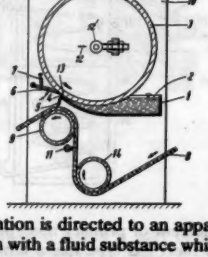
Hans Fleissner, Egelsbach, Germany, assignor to Vepa AG

Filed Nov. 14, 1969, Ser. No. 876,881

Claims priority, application Germany, Nov. 22, 1968, P 18 10 361.2; April 26, 1969, P 19 21 499.4; June 13, 1969, P 19 30 115.6

Int. Cl. D06c *1/06*; B05c *5/00*

U.S. Cl. 68—5 D **29 Claims**



The present invention is directed to an apparatus for coating a material length with a fluid substance which comprises a

coating trough containing the fluid coating substance, a roller means rotatably mounted and adapted to be partially immersed in said fluid coating substance, the surface of the roller means and the edge of the trough defining an aperture for the dispensing of the fluid coating substance, said edge of the trough being provided with a liquid guiding element which extends in the downward direction from said edge and means for conveying the material length to be coated in close proximity to said liquor guiding element.

3,683,649

APPARATUS TO PATTERN AND TO DYE SINGLE COLORED TEXTILES, ESPECIALLY CARPETS, WITH DIFFERENT COLORS OR TONES

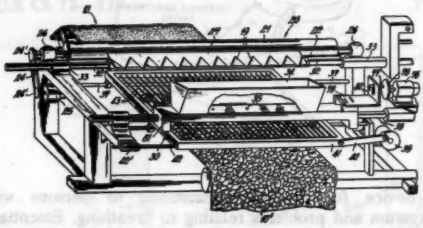
Nassir Takriti; Kurt Quoos; Ferdinand Leifeld, all of Krefeld, and Valentin Appenzeller, Kempen/Niederrhein, all of Germany, assignors to Textilausruestungs-Gesellschaft Schroers & Co., Krefeld, Germany

Filed June 9, 1969, Ser. No. 831,297

Claims priority, application Germany, June 15, 1968, P 17 60 657.4; Oct. 10, 1968, P 18 02 318.2

Int. Cl. D06c *1/06*; B05c *5/00*

U.S. Cl. 68—5 D **29 Claims**



1. Apparatus for dyeing a continuously traveling textile breadth, comprising means for guiding the breadth through a non-vertical path, means spaced above said path for dispensing a row of interspaced low-speed dye liquid jets towards this path, said row extending transversely with respect to said path, and mechanical means for effecting dispersions of said jets into individual dye liquid droplets falling on said path.

3,683,650

DEVICE FOR TREATING STRAND-LIKE MATERIAL

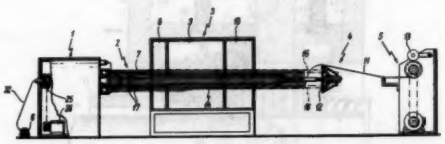
Kurt Hirschburger, Reutlingen, Germany, assignor to Eugen Hirschburger KG, Reutlingen, Germany

Filed Nov. 13, 1970, Ser. No. 89,422

Claims priority, application Germany, Nov. 14, 1969, P 19 57 219.1

Int. Cl. D06c *1/00*

U.S. Cl. 68—5 D **12 Claims**



A method and device for uniformly treating strand-like material, such as yarn, by conveying the yarn through treatment regions on a conveyer which rotates about its longitudinal axis while conveying the yarn in the longitudinal direction. The conveyer has a longitudinally extending shaft with a plurality of thin conveying belts disposed circumferentially thereabout to convey in the longitudinal direction. The belts have diagonal yarn thread engaging grooves through which the thread is passed to spiral about the longitudinally extending shaft. Motor and gearing mechanisms are provided to drive the belts for conveying the yarn in the longitudinal direction while rotating the plurality of conveying belts as a unit about the longitudinal axis.

3,683,651

DEVICE FOR HOUSEHOLD USE, FOR WASHING AND DRYING LINEN, ARTICLES OF APPAREL AND THE LIKE

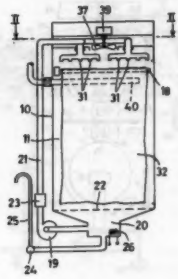
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A Zanussi S.p.A., Pordenone, Italy

Filed Nov. 3, 1970, Ser. No. 86,411

Claims priority, application Italy, Nov. 10, 1969, 24214 A/69

Int. Cl. D06f *39/08, 31/00*

U.S. Cl. 68—20 **6 Claims**



A linen washing and drying machine which is partitioned into two vertical adjoining chambers, one for washing and drying lightweight, delicate fabrics, and the other for washing the usual linen. The articles are hung on suspension rods and means are provided for shaking the articles. A valve is provided for the piping which feeds the sprinklers with detergent and/or rinsing liquor so as to reduce the flow of the fluid concerned as it reaches a certain maximum limiting temperature for the washing of delicate articles. The valve can be controlled by thermostatic means or otherwise. Means can also be provided for reducing the intensity of the shaking action imposed upon to the articles.

3,683,652

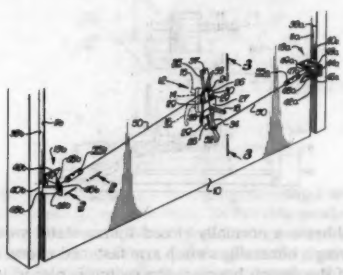
CENTER LOCK INSIDE HANDLE KEEPER

William Halopoff, Huntington Beach, and Larry W. Baker, Rowland Heights, both of Calif., assignors to Holmes Hardware & Sales Co., Los Angeles, Calif.

Filed Oct. 5, 1970, Ser. No. 77,984

Int. Cl. E05b *63/14*

U.S. Cl. 70—146 **6 Claims**



A latching mechanism for an overhead garage door comprised of a center lock on the outside of the door that controls

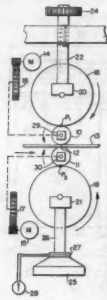
the turning of an outside handle in unison with an inside handle which cooperates with spring latches attached on the sides of the inner surface of the garage door to release the door for opening when the center lock is in an unlocked condition. The inside handle can be turned independently of the outside handle to enable opening the door from the inside of the garage irrespective of whether the center lock on the outside of the door is in a locked or unlocked condition.

3,683,653

MOTOR DRIVE SYSTEM FOR ROLLING MILL

Howard Nesbit Cox, Boxford, Mass., assignor to General Electric Company

Filed Feb. 22, 1971, Ser. No. 117,319
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 10 Claims



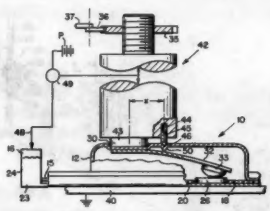
In a four high rolling mill having two powered working rolls and a pair of backup rolls, the backup rolls are synchronized by controlling the drive motors to force differential slippage between the working rolls and the strip being processed through the mill. Angular position comparison means senses and lack of synchronism of the backup rolls and produces a control signal which differentially adjusts the torques produced by the drive motors. Synchronization of the backup rolls reduces roll force variations caused by eccentricity of rolls.

3,683,654

APPARATUS FOR CALIBRATING THERMOSTATIC SWITCHES

Charles John Hire, Pittsford, N.Y., assignor to Combinatie Weslesschelde v.o.f., Utrecht, Netherlands

Division of Ser. No. 878,767, Nov. 21, 1969, Pat. No. 3,587,022. This application Jan. 25, 1971, Ser. No. 109,192
Int. Cl. B21d *53/00*
U.S. Cl. 72—30 7 Claims



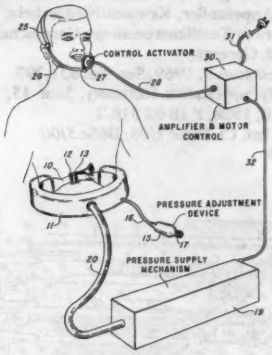
To calibrate a normally-closed thermostatic switch of the type having a bimetallic switch arm fastened at one end to the inside of the switch housing, the switch is placed in an oven beneath reciprocable calibrating tool with the switch arm connected in circuit with the tool operation means. When the switch reaches the temperature at which it is intended to open, the tool is lowered so that a pair of projections on its lower end deform the housing at two spaced points until the switch arm snaps to its open position, simultaneously terminating the calibrating operation and deenergizing the tool actuating means.

3,683,655

BREATHING ASSIST APPARATUS

Arlton H. White, 6947 Meadowcreek Dr., Dallas, Tex., and John S. Chapman, 3606 Lovers Lane, Dalla, Tex.

Filed March 27, 1970, Ser. No. 23,197
Int. Cl. A61h *31/02*
U.S. Cl. 128—30.2 7 Claims



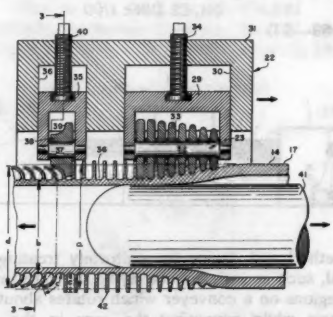
A device for providing assistance to persons with emphysema and problems relating to breathing. Essentially the invention provides means for applying pressure to the abdominal and lower rib region which assists in forcing air from a person's lung. The pressure is applied during the exhalation phase of the breathing cycle and the pressure applying means is activated by the person's efforts to exhale. The pressure is released upon completion of the exhalation phase avoiding interference with the inhalation phase.

3,683,656

HEAT EXCHANGER APPARATUS AND METHOD OF MAKING THE SAME

Carl M. Lewis, c/o The Trane Co., LaCrosse, Wis.

Filed March 25, 1970, Ser. No. 22,491
Int. Cl. B21d *53/06*
U.S. Cl. 72—98 4 Claims



A shell-and-tube heat exchanger is shown having a bundle of tubes each of which is provided with external helical fins except in land portions adjacent tube sheets and supports. The

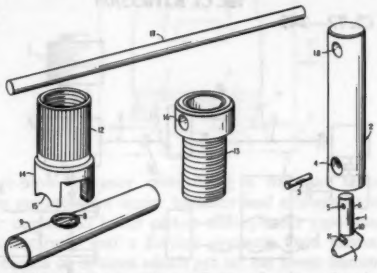
tubes are constructed by first rolling grooves into the tube and reducing the tube diameter, then roll extruding fins up from the surface of decreased diameter to a diameter larger than the land portions of the tube and larger than the tube apertures in the tube sheets and supports of the heat exchanger, and finally rolling portions of the fins partially over toward an adjacent fin in a common axial direction to reduce the outer diameter of the fins so that the tube can be passed through the tube apertures of the tube sheets and supports. The rolling over of the fins is accomplished by applying lateral pressure on the fins through the use of a trailing roll-over die. Means is provided for radially withdrawing the groove forming and fin extruding dies from the surface of the tube without an equal withdrawal of the trailing roll-over die whereby all fins exceeding the desired diameter may be bent over to establish the desired fin diameter.

3,683,657

PIPE FITTING TOOL

Fred Davies, 72 Maxwell Ave., Orange, New South Wales, 2800, Australia

Filed May 18, 1970, Ser. No. 38,120
Claims priority, application Austria, May 23, 1969, 55,495/69
Int. Cl. B21d *1/02, 37/04*
U.S. Cl. 72—112 **7 Claims**



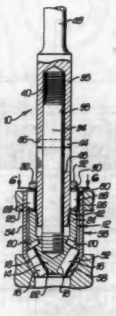
A pipe fitting tool comprises a former having a head and a shank. The head has a recess allowing insertion through a hole in the wall of a pipe although the width of the head is greater than the greatest width of the hole. The former may then be rotated and withdrawn from the hole to form an annular flange around the hole for insertion of a branch pipe.

3,683,658

ROLLER-TYPE EXPANDER TOOL

Ronald C. Roeschlaub, Los Angeles, Calif., assignor to Irontite Products Co., Inc., El Monte, Calif.

Filed Aug. 19, 1970, Ser. No. 65,183
Int. Cl. B21d *39/06, 39/10*
U.S. Cl. 72—119 **4 Claims**



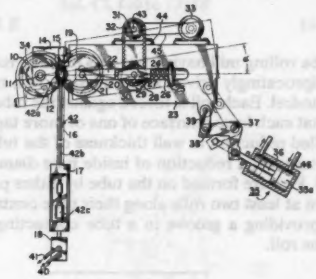
A roller-type expander tool having at its forward end a forwardly convergent array of circumferentially spaced rollers, and having rearwardly of such forwardly convergent array a substantially cylindrical array of circumferentially spaced rollers capable of radially outward expansion.

3,683,659

VIBRATORY IMPACT BENDER

Ryotaro Hikida, 50, 1-chome, Yamanaka-cho, Showa-ku, Nagoya; Taikichi Awano, 84-1, Otokoyama, Narumi-cho, Midori-ku, Nagoya; Junichiro Itoh, 18, 1-chome, Kashiwagi-cho, Mizuho-ku, Nagoya; Atsushi Danno, 2-20, Hitotsuyama; Masao Matsui, 13, 2-chome, Hisakata, both of Showa-ku, Nagoya; Mitigi Inaba, and Mituyuki Isogai, both of c/o Aisin Seiki Kabushiki Kaisha, 1 Asahi-machi 2-chome, Kariya, all of Japan

Filed June 18, 1970, Ser. No. 47,473
Int. Cl. B21d *9/05*
U.S. Cl. 72—150 **6 Claims**



This invention relates to the technique for the bending fabrication of an elongated hollow bar stock having an open slot extending over the whole length thereof by means of a first and a second rotary die element cooperating with each other into a hollow bend.

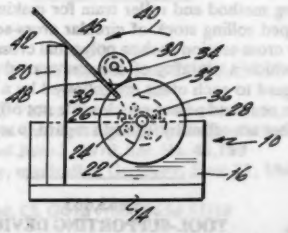
The invention is characterized by a vibration-generating means and a vibration-transmitting means from said generating means to the second die element for providing a continuously repeated percussion effect upon the bar stock, as the bending process progresses.

3,683,660

METHOD AND APPARATUS FOR PRODUCING A STAIR PROTECTIVE TREAD

Lee Karpfen, 34 Nassau St., Elmont, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,200
Int. Cl. B21d *7/04*
U.S. Cl. 72—152 **4 Claims**

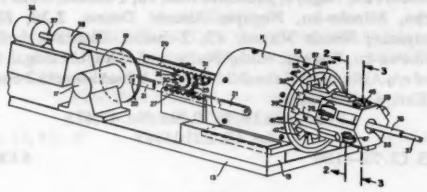


This invention relates to a method of forming a molded stair protective tread from a flat sheet of flooring product by supporting the flat sheet of flooring product against a vertical support member and rotating a roller against the sheet with concurrent application of sufficient pressure so that the flat sheet of flooring product is forced against the vertical support member until it is bent to the curvature of the roller at the point where the roller contacts the sheet.

3,683,661
TUBE ROLLING MILL FOR PRODUCING FINNED TUBING

Fred W. Bibighaus, Wapakoneta, Ohio, assignor to Superior Tube Company, Norristown, Pa.

Filed Feb. 4, 1971, Ser. No. 112,723
Int. Cl. B21b *17/06*
U.S. Cl. 72—208 10 Claims

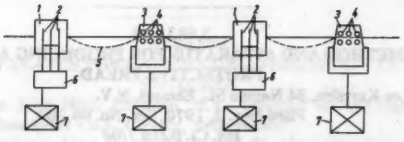


A tube rolling mill having two sets of three rolls each which are reciprocatingly driven along a length of a tube supported by a mandrel. Each roll is forced against the tube by individual cams that each have a surface of one or more tapers to provide controlled reduction in wall thickness of the tube. If the mandrel is tapered, a reduction of inside tube diameter is accomplished. Fins are formed on the tube by either providing space between at least two rolls along their tube contacting surfaces or by providing a groove in a tube contacting surface of at least one roll.

3,683,662
ROLLING METHOD FOR WIRE AND OTHER ROD-SHAPED ROLLING STOCK

Walter Dechene, Hagen; Herbert Rothe, Hagen-Emst, and Fritz Salmen, Herdecke/Ruhr, all of Germany, assignors to Stahlwerke Sudwestfalen AG, Huttental-Geisweid, Germany

Filed June 29, 1970, Ser. No. 50,597
Int. Cl. B21b *1/18*
U.S. Cl. 72—235 8 Claims



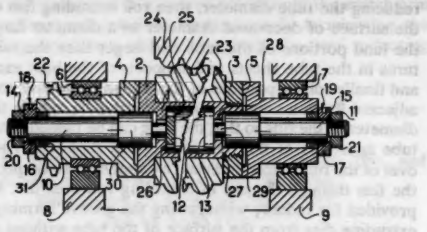
Rolling method and roller train for making wire and other rod-shaped rolling stock of circular cross-section and nearly circular cross-section such as polygonal cross-section, according to which a plurality of successive oval passes not offset with regard to each other are followed by a plurality of compression or round passes which while not offset with regard to each other are offset by 90° with regard to said preceding oval passes.

3,683,663
TOOL-SUPPORTING DEVICE

Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France

Filed July 22, 1970, Ser. No. 57,222
Claims priority, application France, July 25, 1969, PV 6925587
Int. Cl. B21b *31/00*; B21d *13/04*
U.S. Cl. 72—238 9 Claims

A supporting device for tools on machines for profiling or cutting sheet metal or metal strips, comprising a tool-bearing shaft coupled at each end with a sheath rotating in a bearing,

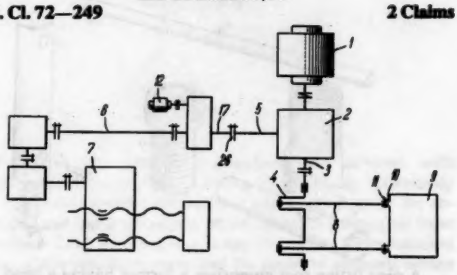


each sheath being secured to the shaft by means of a removable spindle.

3,683,664
MAIN DRIVE OF A MILL FOR COLD ROLLING OF TUBES

Jury Petrovich Shmidrov, ulitsa Sovetskaya 9, kv. 47, Elektrostal, Moskovskaya oblast; Felix Davydovich Mogilevkin, ulitsa Svobody, 145, kv. 55, and Oleg Yakovlevich Rabinovich, ulitsa Gagarina, 11, kv. 37, both of Chelyabinsk, all of U.S.S.R.

Filed July 1, 1970, Ser. No. 51,557
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 2 Claims

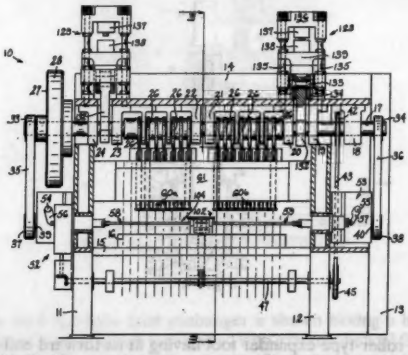


The invention consists in that the chain of the transmission of the main drive of the mill has an auxiliary motor which is designed to adjust the mill and replace the working stand in the course of the mill operation.

3,683,665
MULTIPLE STATION FORMING PRESS

Charles R. Bradlee, Cheshire, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Sept. 29, 1970, Ser. No. 76,575
Int. Cl. B21j *9/18*
U.S. Cl. 72—405 22 Claims



This disclosure relates to a press adapted to receive strip material and form primary workpieces in two sets of work sta-

tions while attaching a secondary workpiece to the primary workpiece. Also disclosed are cam driven, fluid pressure returned forming members which permit higher speeds of operation.

3,683,666

COUNTER-BLOW HAMMER WITH A HAMMER DRIVE

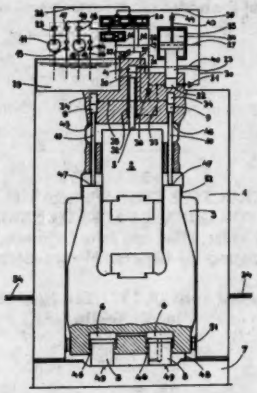
Harald Hassel, Weimarer Strasse 29, 8630 Coburg, Germany

Filed June 29, 1970, Ser. No. 51,746

Claims priority, application Germany, June 28, 1969, P 19 33 005.3

Int. Cl. B21j 7/28

U.S. Cl. 72—407 4 Claims



Counter-blow hammer comprising a hammer frame in which are mounted an upper hammer and a lower hammer, hydraulic upper and lower piston and cylinder type hammer drives respectively and a further pressure fluid piston and cylinder device or devices which act on the lower hammer to impart a pushing effect on it.

3,683,667

COINING PRESSES

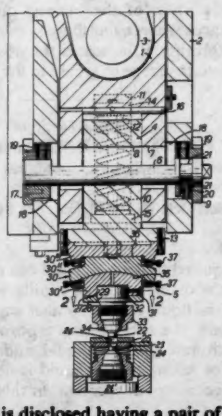
Horace B. Merriman, "Kingfishers," Coronation Rd., South Ascot, Berkshire; William A. H. Collier, 17, Weston Close, Solihull, Warwickshire; and Barry A. Richardson, 21, The Graylands, Coventry, Warwickshire, all of England

Filed Oct. 17, 1969, Ser. No. 867,229

Claims priority, application Great Britain, Oct. 19, 1968, 49,709/68

Int. Cl. B21j 13/02

U.S. Cl. 72—446 6 Claims



A coining press is disclosed having a pair of opposing dies, the lower die is substantially stationary during the coining operation and the upper die moves toward the lower to engage a blank disposed between them. A press slide is mounted to reciprocate in the direction of the lower die. A tooling slide carries the upper die and is slidably mounted in the press slide to move along a line toward and away from the lower die and is spring urged away from the lower die toward the press slide to normally engage a stationary stop. The total travel of the tooling slide makes up only a small part of the travel of the press slide in order that the upper die will have a normal rest position only just above the lower die, and free of a carrier member used to feed blanks between the dies.

3,683,668

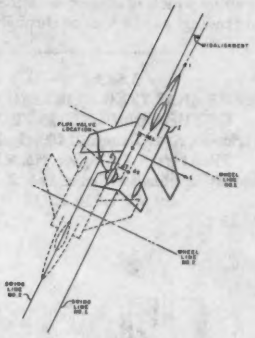
COMPASS CALIBRATOR

Donald H. Baker, and David R. Brickner, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Jan. 26, 1971, Ser. No. 109,872

Int. Cl. G01c 17/38

U.S. Cl. 73—1 E 14 Claims



A magnetic compass calibrator module, suitable for plug-in or integral operation with a vehicle compass system having a magnetic azimuth detector, measures and calibrates any magnetic error induced in the detector by the vehicle and/or its cargo. A feature of the compass calibrator is that of utilizing a portion of the electronic magnetic compass control system of the vehicle to perform the calibration computation functions and thereby reduce the size and complexity of the calibrator itself.

3,683,669

APPARATUS FOR DETERMINING THE GAS CONTENT OF SAMPLES

Thaddaus Kraus, Vaduz Furstentum, Liechtenstein, assignor to Balzers Patent Und Beteiligungs Aktiengesellschaft

Filed June 3, 1970, Ser. No. 43,109

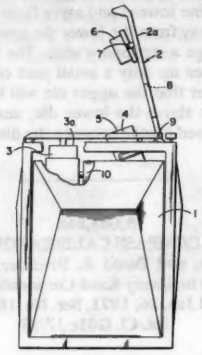
Claims priority, application Germany, June 21, 1969, G 69 24 725.2

Int. Cl. G01n 7/00; B65d 51/18

U.S. Cl. 73—19 4 Claims

An apparatus for determining the gas content of samples includes a vacuum furnace for heating the samples to be tested which is arranged within a protective housing having a closeable cover and which is connected to a pump within the housing provided for evacuating the furnace. The apparatus includes an indicator for analyzing the gases extracted from the samples, arranged with the furnace in the upper portion of the housing adjacent the cover. The cover is hinged and carries a pivotally mounted cover for the furnace which is located so

that it will seat over the furnace closure rim and close it in a gas tight manner when the cover is closed. The cover also includes an opening which is aligned with the indicator so that the indicator readings can be viewed through the cover.

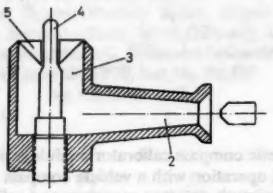


3,683,670

ATMOSPHERE ANALYZER WORKING BY VARIATION OF THE COMBUSTION FRONT

Joaquin M. Iriondo, Arda Basagoiti 40, Algorta, Spain

Filed Feb. 5, 1970, Ser. No. 8,804
Claims priority, application Spain, Feb. 8, 1969, 363,466
Int. Cl. G01n *25/28*
U.S. Cl. 73—25 **3 Claims**



An atmosphere analyzer operates by variation of the combustion front. The analyzer includes a main or pilot burner having an inlet and a nozzle. A thermosensor is held centrally within the nozzle by a flame shaping member which forms a flame having the shape of a star with three or more points. The inner vertices of the star are situated near the thermosensor and the other vertices near the walls of the nozzle.

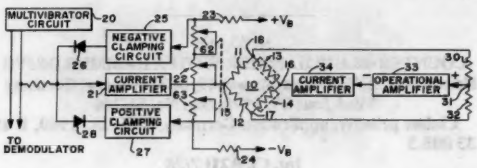
3,683,671

MEASURING SYSTEM INCLUDING THERMAL CONDUCTIVITY DETECTOR MEANS

Maarten Van Swaay, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed Sept. 14, 1970, Ser. No. 72,068
Int. Cl. G01n *27/18*; G05f *1/16*
U.S. Cl. 73—27 R **9 Claims**

A reference thermal conductivity detector and a measuring thermal conductivity detector are connected in different branches of an electrical bridge circuit. The bridge is excited at one power node by a clamped square wave symmetrical about a base voltage line; and the other power node is excited by a feedback circuit sensing the signal at the signal nodes and maintaining the average value of the common mode signal at zero relative to the base line. The output signal taken from the signal nodes is fed to a demodulator circuit for generating an output signal representative of the thermal conductivity of the sample being sensed. Delay circuits are provided for inhibiting the operation of the demodulator during those periods when the polarity of the bridge input power signal is changing.



3,683,672

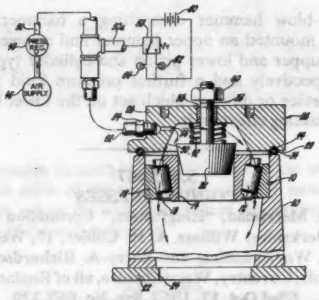
Patent Not Issued For This Number

3,683,673

NON-DESTRUCTIVE TEST APPARATUS AND METHOD FOR GREASE PACKED BEARINGS

Richard H. Eichler, Flint, and John G. Simon, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 29, 1971, Ser. No. 138,493
Int. Cl. G01m *3/02*
U.S. Cl. 73—37 **6 Claims**



A nondestructive test apparatus and method for checking grease packed bearings in which the inner and outer races to be tested are sealed and then low pressure aeriform fluid is directed to the portion of the bearing packed with grease between these races whereby, if there is relatively free flow of this fluid therethrough, it indicates the absence of grease or less than complete coverage of grease in the bearing.

3,683,674

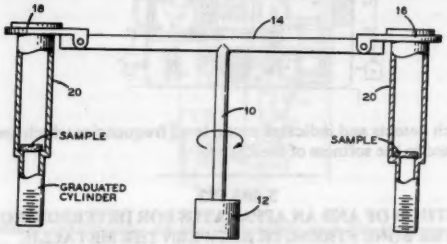
MEASUREMENT OF PORE SIZE AND POROSITY

Salil K. Roy, New Brunswick, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,948
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **12 Claims**

The force required to drive a liquid out of a capillary is dependent upon the diameter of the capillary as well as the surface tension of the liquid and its contact angle with the material of the capillary. If a specimen of a porous material having capillaries is saturated with a liquid and rotated in a centrifuge, the force acting on the liquid is dependent upon the speed and the geometry of rotation. In this apparatus, a sam-

ple impregnated with a known liquid is rotated in a predetermined manner at the incremental constant speeds and the volume of liquid driven out of the sample is measured for each



speed of rotation. From this information, a size-volume distribution of porosity of the sample and, therefore, of the material from which the sample was derived can be made.

3,683,675

METHOD AND MEANS FOR LEAK DETECTION

Raymond V. Burton, Jr., Granada Hills, and Eugene L. Giachino, Glendale, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 4, 1970, Ser. No. 86,973
Int. Cl. G01m *3/20*
U.S. Cl. 73—40.7 **5 Claims**

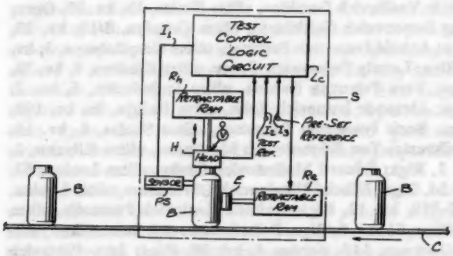
A method of leak detection in which a material such as benzoic acid is dispersed in air or nitrogen in a tank or container to be checked for leaks, the tank or container is then pressured and the dispersed material is allowed time to accumulate and deposit at all leak sites, the pressure is released and the interior of the tank or container is inspected for deposits of the material at the origin of the leaks.

3,683,676

FLUIDIC LEAK DETECTOR

Hyman Hass, Stamford, Conn., assignor to Applied Fluidics, Inc., Stamford, Conn.

Filed July 27, 1970, Ser. No. 58,236
Int. Cl. G01m *3/32*
U.S. Cl. 73—45.1 **4 Claims**



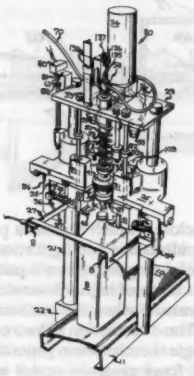
A fluidic detector for testing bottles for leaks. The detector includes a test station having a sensor adapted to signal the presence of a bottle at the test position, the signal activating a control circuit which initiates the operation of a retractable pressure-sensing head. The head sealably engages the bottle and proceeds to fill it with a compressible fluid, the resultant pressure build-up in the bottle being monitored and applied to a fluidic comparator where the variable pressure is compared with reference values to determine whether the bottle is acceptable, and in the event there is a leak which renders the bottle unacceptable, to produce a reject signal which, after the head is disengaged from the bottle, is applied to an ejector to remove the defective bottle.

3,683,677

LEAK DETECTOR

David S. Harris, 3118 Heatherdowns Blvd, Toledo, Ohio

Filed June 22, 1970, Ser. No. 48,320
Int. Cl. G01m *3/32*
U.S. Cl. 73—49.2 **16 Claims**



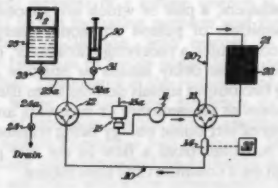
Method and apparatus is provided for detecting leaks in plastic bottles and other containers. The device is capable of testing such containers for leaks without relying upon an outside source of air to pressurize the container being tested and can do so at a faster rate than was heretofore possible. Pressured fluid is introduced into the bottle or other container to be tested from a self-contained unit. A pressure switch having a diaphragm type valve is used to detect the presence of a leak. Upon pressurizing the container or as part of the pressurizing step, means are actuated tending to urge the pressured fluid from the bottle thereby speeding up the testing process. Additionally, the present device checks a bottle for the accuracy of its neck or finish portion.

3,683,678

METHOD AND APPARATUS FOR MOLECULAR WEIGHT MEASUREMENT

Wallace W. Yau, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1971, Ser. No. 139,446
Int. Cl. G01n *31/08*
U.S. Cl. 73—53 **2 Claims**



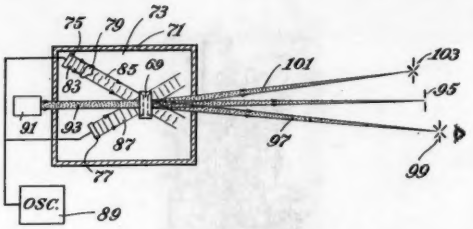
Method and apparatus for rapid measurement of average molecular weight of polymers wherein a specimen is placed in solution and contacted with a solid material into which substantial permeation occurs as a function of molecular size, then determining the average molecular weight as a function of the ratio of as-received and final equilibrium polymer concentrations one to the other.

3,683,679

ULTRASONIC INTERFERENCE PATTERN DETECTOR

Byron B. Brenden, 1206 Cedar St., and Russell B. Kidman, 1408 Thayer Dr., both of Richland, Wash.

Filed Aug. 22, 1969, Ser. No. 852,444
Int. Cl. G01n 29/04
U.S. Cl. 73—67.5 H 17 Claims



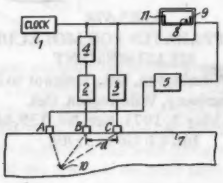
A thin cell is disclosed which utilizes a pair of membranes transparent to both ultrasonic and light energy and containing therebetween particles suspended in a liquid matrix, the particles migrating from areas of high ultrasonic pressure to areas of low ultrasonic pressure when the medium is irradiated with ultrasonic energy. The intersection of two coherent ultrasonic beams at a finite angle therebetween generates an interference pattern containing fixed pressure nodes which may be detected by placing the suspended particle cell at the area of beam intersection. If one of the intersecting ultrasonic beams is modified by an object, the diffraction pattern formed in the cell is an ultrasonic hologram from which an optical image of the object, as viewed by ultrasound, is formed in a diffracted order of coherent light passed through the cell.

3,683,680

ULTRASONIC FLAW DETECTION APPARATUS

Philip Charles Johnson, Theumer, and Christoph Rudolf Emil Johnann, Derby, both of England, assignors to British Railways Board, London, England

Filed Feb. 3, 1970, Ser. No. 8,250
Int. Cl. G01n 29/04
U.S. Cl. 73—67.7 5 Claims



An ultrasonic flaw detecting arrangement comprising three ultrasonic transducers, a pair of which are spaced apart and constitute transmitters of pulsed ultrasonic energy and the third of which constitutes a receiving transducer, or vice versa, and electronic time delay means or position adjustment means enabling two output signals derived from the use of said pair of transducers as transmitters or receivers and resulting from wave fronts of ultrasonic energy being transmitted into a test piece and reflected from a flaw in the test piece to be made coincident on a common time base means.

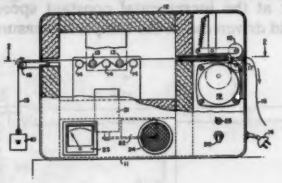
3,683,681

METHOD AND APPARATUS FOR SOFTNESS TESTING

Ruel E. Taylor, Gorham, Maine, assignor to Ruel E. Taylor, Inc., Gorham, Maine

Filed March 19, 1971, Ser. No. 126,204
Int. Cl. G01n 19/00
U.S. Cl. 73—78 15 Claims

A paper fabric softness tester provides for a standard flexing of a sample of the fabric with a sound sensor and detector



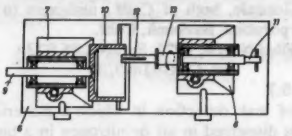
which detects and indicates sound level frequencies which are related to the softness of the fiber

3,683,682

METHOD OF AND AN APPARATUS FOR DETERMINING THE BOND STRENGTH BETWEEN THE METALLIC SHEATH AND THE NON-METALLIC JACKET OF A CABLE

Leonhard Jochmann, Gigelesberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 24, 1970, Ser. No. 58,021
Claims priority, application Germany, Aug. 5, 1969, P 19 39 836.8
Int. Cl. G01n 19/04
U.S. Cl. 73—88 B 4 Claims



The bond strength with which the aluminum sheath adheres to the polyethylene jacket of a cable is determined by measuring the force required to peel off the sheath from the jacket. The bond strength so measured provides an indication of the effectiveness of the bond as a moisture and vapor barrier. A simple measuring apparatus is clamped in a tensile strength testing machine to obtain a reading of the measured strength. The test piece is mounted in a rotatable collet having a split mandrel which clamps the aluminum sheath and peels it from the plastic. The torque on the mandrel is measured on the machine.

3,683,683

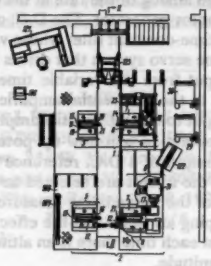
AUTOMATIC DIAGNOSTIC STATION FOR AUTOMOBILES

Vladimir Vasilievich Demidov, ulitsa Skolas, 1b, kv. 25, Ogre; Oleg Semenovich Goldshtein, ulitsa Gogolya, 8/10, kv. 29, Riga; Arnold Ivanovich Peterson, ulitsa Gospitalnaya, 3, kv. 5, Riga; Leonty Fedorovich Gusev, ulitsa Kleslera, 5, kv. 28, Riga; Vera Petrovna Rubina, ulitsa Inchukalna, 5, kv. 2, Riga; Alexandr Ivanovich Zelik, ulitsa Ierikju, 2a, kv. 108, Riga; Boris Ivanovich Tarantsev, ulitsa Skolas, 8, kv. 11, Saulkrasty; Yan Eduardovich Martinson, ulitsa Kliyanu, 1, kv. 1, Riga; Eduard Modestovich Orsky, ulitsa Lenina, 57, kv. 34, Riga; Nikolai Nikolaevich Okruzhnov, ulitsa Lenina, 352-358, kv. 12, Riga; Laimon Karlovich Purmalis, ulitsa Tallinas, 51, kv. 8, Riga; Felix Semenovich Sukonnikov, ulitsa Gorkogo, 143, korpus 4, kv. 88, Riga; Jury Petrovich Grachev, ulitsa K. Marxa, 69/71, kv. 62, Riga; Anatoly Nikolaevich Derevtsov, ulitsa Bagrationa, 3, kv. 21, Omsk; Dmitry Nikolaevich Shekherev, ulitsa Rozy Ljuxemburg, 95, Omsk; Dmitry Stepanovich Eliseev, ulitsa Frunze, 89, kv. 3, Omsk; Alexei Ivanovich Vodolagin, ulitsa Dzirtsiema, 70, kv. 30, Riga; Arnold Yanovich Zurovsky, ulitsa Ludviga, 2a, kv. 2, Riga, and Leonid Borisovich Drits, ulitsa Petra Stuchki, 59/61, kv. 23, Riga, all of U.S.S.R.

Filed June 17, 1970, Ser. No. 46,889
Claims priority, application U.S.S.R., June 20, 1969, 1343812; June 20, 1969, 1343813; June 20, 1969, 1343819
Int. Cl. G01m 15/00
U.S. Cl. 73—117 5 Claims

An automated diagnostic station for automobiles compris-

ing all the necessary technical equipment for rapid and all-round examination of the automobile and for spotting the troubles.

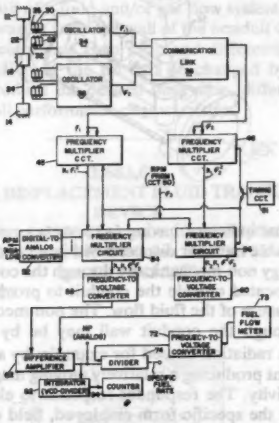


3,683,684

MEASURING APPARATUS EMPLOYING VARIABLE FREQUENCY TRANSDUCER

Stephen B. Judlowe, 47 Sagamore Dr., Murray Hill, N.J.

Filed Oct. 8, 1970, Ser. No. 79,020
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A **14 Claims**



Torsion, horsepower, and specific fuel rate measuring apparatus includes vibrating wire transducers secured about the periphery of a coupling shaft. Digital apparatus is provided to generate a pulse train having a frequency proportional to the square of the vibrating wire frequency to develop torsion information. The digital torsion wave train is then employed together with a pulse sequence characterized by a rate dependent upon the rotational shaft speed to generate an asynchronous pulse train having a frequency proportional to the horsepower coupled by the shaft.

A fuel flow transducer generates pulse information which is combined with the horsepower signal to provide a figure of merit characterizing a composite power plan, viz., specific fuel rate defined by the ratio of the useful horsepower output of the plant to the rate at which fuel is consumed by the plant to develop that power.

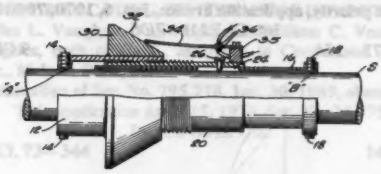
3,683,685

APPARATUS FOR MEASURING ANGULAR ROTATION

Gary L. Vlegelahn, Lake Linden, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed March 27, 1970, Ser. No. 23,380
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A **10 Claims**

Relative angular rotation between two spaced areas on a rotatable member is converted to linear motion by providing a threaded engagement between two tubes each of which is connected to a respective one of said areas for rotational movement therewith. Relative rotation between the spaced areas causes relative rotation between the tubes and this is converted by the threaded engagement into axial or linear movement. This linear movement can then be converted into an electrical signal which can be registered or recorded by an electronic device. To increase the range of angular rotation



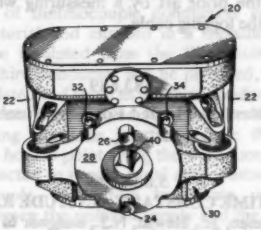
which can be effectively measured, a third member is interposed between those already discussed. A threaded connection is provided between this third member and one of the first mentioned members and a pin and slot connection is provided between the third member and the other of the two first mentioned members. The pin and slot connection accommodates linear movement so that axial movement of the connections of the tubes at the spaced areas does not occur.

3,683,686

MECHANICAL TORQUE WRENCH AND A HYDRAULIC READOUT THEREFOR

Anthony J. Sergan, Glastonbury, Conn., assignor to Raymond Engineering, Inc., Middletown, Conn.

Filed April 27, 1970, Ser. No. 32,234
Int. Cl. G01l 5/24
U.S. Cl. 73—139 **11 Claims**



The output member of a torque wrench is "free-floating" with respect to the mounting member and therefore capable of epicycloidal oscillation, with respect to the mounting member, in response to forces generated by system misalignment or offset. This results in the reduction of side loading on the system to be torqued, less tendency to bind, and the production of accurate torque force readings. The torque measuring system comprises two hydraulic load-cells and a Bourdon gauge interconnected by hydraulic tubing, hermetically sealed and filled with a non-compressible fluid. The load-cells are loosely mounted symmetrically in opposite ends of the mounting member and are each compressible in either torque direction by loading pins mounted on the wrench case. The readout is thus hysteresis free. The use of two interconnected load-cells provides force compensation and thereby assures that an accurate reading is transmitted to the gauge. Furthermore, this force balance and the sliding motion permitted transverse to the load-cells' axes facilitate the above-described "free-floating" feature.

3,683,687

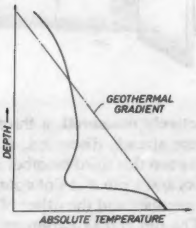
Patent Not Issued For This Number

3,683,688

METHOD AND APPARATUS FOR THERMOMETRIC WELL LOGGING

Louis A. Allaud, Paris, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,814
Claims priority, application France, Jan. 6, 1970, 7000197
Int. Cl. E21b 47/06
U.S. Cl. 73—154 9 Claims



An illustrative embodiment of the present invention includes methods and apparatus for temperature logging of oil wells having thermal anomalies. After having determined the geothermal gradient of the borehole, a signal representing the temperature at each point of the borehole is generated and from this a second signal equal to the product of the gradient and the depth of the point is subtracted. This generates a signal representative of only the thermal anomalies in the well. Apparatus for performing the method includes a compensation signal generator which can be set in accordance with the gradient and which is capable of multiplying the gradient by the depth reached. A depth signal for this purpose is generated as known in the prior art by a measuring wheel driven by movement of the logging cable.

3,683,689

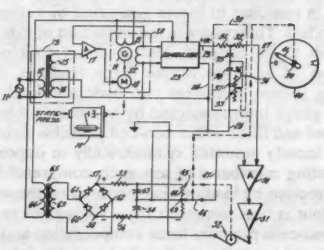
Patent Not Issued For This Number

3,683,690

VARIABLE TIME CONSTANT ALTITUDE RATE DEVICE

John H. Andresen, Jr., Hewitt, N.J., assignor to Intercontinental Dynamics Corporation, Englewood, N.J.

Filed July 29, 1970, Ser. No. 59,202
Int. Cl. G01c 21/00
U.S. Cl. 73—179 7 Claims



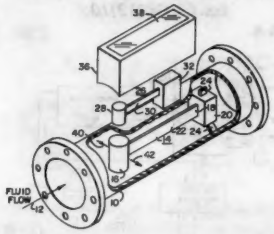
A pressure altitude rate indicator is constructed with means for providing variable time constant damping which decreases with increases in altitude rate. Variable time constant damping is achieved by producing a D.C. voltage analog derived from an A.C. voltage analog of the rate at the output of an altitude transducer motor-generator. The D.C. analog is passed through a variable time-constant filter whose variable element is driven by the same servo system that drives the rate display indicator. The output from the variable time constant filter provides one input to the differential amplifier of the display servo. The other input to this differential amplifier is provided by the movable contact of a follow-up potentiometer connected across the output of a D.C. reference voltage source. The parameters of the circuit are selected so that within the most used portion of the range being measured, variations in time constant damping are such that the effect is the same as producing a readout each time there is an altitude change of a predetermined magnitude.

3,683,691

VORTEX REACTION TYPE FLUID FLOW INDICATOR

Gilbert Kivenson, Pasadena, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1970, Ser. No. 73,543
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 5 Claims



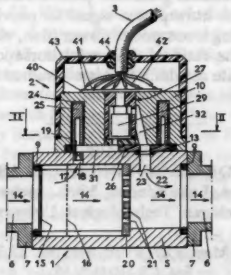
A fluid flow indicator having (a) a vortex reaction responsive oscillatable member disposed within a conduit, for transmitting energy non-mechanically through the conduit wall to a responder located outside the conduit to provide a response that is a measure of the fluid flow. The non-mechanical transmission through the conduit wall may be by way of electromagnetic radiation caused for example: by a moving magnetic element producing a relatively moving magnetic field; or by radioactivity. The responder responds to electromagnetic radiation in the specific form employed, field disturbance or change by a moving magnetic member, or radioactivity, as the case may be.

3,683,692

PROCESS AND APPARATUS TO CALCULATE AND MEASURE THE FLOW OF A GASEOUS FLUID

Rene J. Lafitte, 87 rue de Falaise, Caen, Calvados, France

Filed Jan. 7, 1971, Ser. No. 104,664
Claims priority, application France, Jan. 8, 1970, 7000516
Int. Cl. G01f 1/00; G01p 5/10
U.S. Cl. 73—204 10 Claims



An apparatus to compute and measure the flow of a gaseous fluid by measuring the quantity of heat necessary to raise the

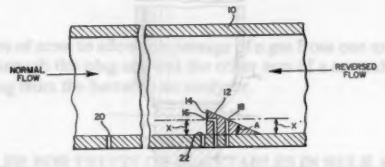
temperature of the fluid comprising a sensing means disposed in the gaseous flow and a reference means disposed in a dead end cavity in such a manner as to be insensitive to the flow of fluid.

3,683,693

UNIVERSAL PROPORTIONAL DIFFERENTIAL PRESSURE PRODUCING FLUID FLOW DEVICE

William R. Brown, 341 W. Mt. Vernon St., Lansdale, Pa.

Continuation-in-part of Ser. No. 882,405, Dec. 17, 1969, Pat. No. 3,590,637. This application Oct. 8, 1970, Ser. No. 79,246
Int. Cl. G01p 5/16
U.S. Cl. 73—212 8 Claims



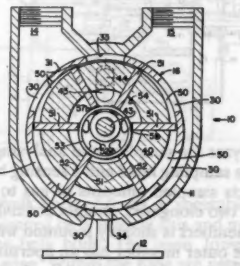
In the conduit of a fluid and/or gas flow system at least one fin extends inwardly from the wall of the conduit to produce a selected predetermined Beta ratio and differential pressure. The configuration of the fin can be changed by numerous methods to produce the desired Beta ratio, differential pressure and overall performance characteristics.

3,683,694

POSITIVE DISPLACEMENT FLUID TRANSLATING DEVICE

Albert J. Granberg, 6178 Estates Dr., Oakland, Calif.

Filed Sept. 14, 1970, Ser. No. 71,739
Int. Cl. G01f 3/08
U.S. Cl. 73—259 15 Claims



An improved fluid translating device with a recording counter employs a cylindrical rotor valve rotatably mounted in a meter case which has a plurality of ports in its periphery which cooperate with lands inside the meter case to form valves between the inlet and outlet, and a vaned rotor eccentrically mounted within the rotor valve which is attached to turn with the rotor valve but about its own axis of rotation so it forms a plurality of closed compartments between the several ports in the periphery of the rotor valve which change in volume as the rotor valve and vaned rotor turn within the meter case to deliver an arcuate, measured volume of fluid from the meter inlet to its outlet. The shaft mounting the vaned rotor eccentrically within the rotor valve and housing can be rotated to change the amount of relative eccentricity and thus the volumetric displacement of the several positive displacement compartments whereby the volume of fluid passing through the meter for each revolution of the rotor valve can be precisely adjusted thereby eliminating the necessity of applying a meter correction error reading.

3,683,695

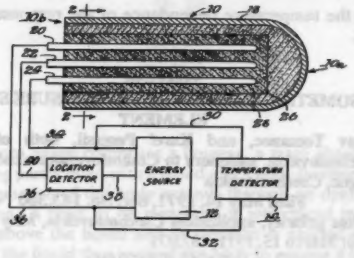
Patent Not Issued For This Number

3,683,696

METHODS OF AND APPARATUS FOR MEASURING AND/OR LOCATING TEMPERATURE CONDITIONS

Charles L. Vaughan, Van Nuys, and William C. Vesser, Los Angeles, both of Calif., assignors to Continental Sensing, Inc., Melrose Park, Ill.

Continuation of Ser. No. 795,278, Jan. 30, 1969, abandoned. This application April 15, 1970, Ser. No. 24,475
Int. Cl. G01k 7/02
U.S. Cl. 73—344 14 Claims



A bridge circuit including a dual balanced energy source and a detector. The circuit is useful, for example, in connection with a method and apparatus for measuring and locating temperature conditions. The apparatus includes a thermoelectric transducer, the dual balanced energy source, a temperature detector and a location detector. The transducer comprises a pair of thermocouple conductors surrounded by thermistor material and encased in a metallic sheath. The sheath may be insulated from the thermistor material, in which case a third conductor will be provided, or the sheath may be uninsulated and serve as the third conductor. The temperature detector is connected to sense the thermoelectric voltage resulting from the junction across the thermistor material at the hottest point along the transducer. The energy source is connected to supply equal and constant currents to the thermocouple conductors to create voltage drops therealong between the point of supply and the hot junction. The location detector is connected to the third conductor and measures the difference between the two voltage drops, which is a function of the location of the hot junction.

3,683,697

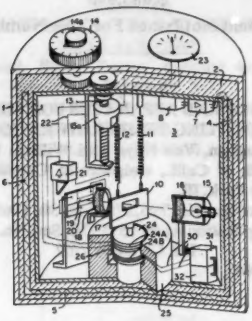
TEMPERATURE COMPENSATED GRAVIMETER

Eberhard Thebis, Hochbergweg 25, 1 Berlin 45, Germany

Filed Sept. 12, 1969, Ser. No. 857,353
Claims priority, application Germany, Oct. 16, 1968, P 18 04 204.1
Int. Cl. G01v 7/16
U.S. Cl. 73—382 5 Claims

In a gravimeter, the gravity-responsive mass-and-spring system which responds to changes in gravity exhibits a dependence of its response upon changes in temperature. For compensating such temperature dependence, an electrically controllable force transmitter, preferably of the electromagnetic type, is connected with the mass of the gravimeter system to impose a corrective force thereupon. The force transmitter is controlled by an electric device which comprises temperature sensor means mounted in the housing which accommodates

the gravimeter system. The sensor means operate to vary the corrective force in the sense required for minimizing or obviating the temperature dependence of the response characteristic.



3,683,698

TENSOMETRIC GAS AND LIQUID PRESSURE SENSING ELEMENT

Ladislav Tomanec, and Karel Pospisil, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed May 14, 1971, Ser. No. 143,360

Claims priority, application Czechoslovakia, May 14, 1970, 3352/70; March 15, 1971, 1873/71

Int. Cl. G01l 9/06

U.S. Cl. 73—398 AR **13 Claims**

A tensometric fluid pressure sensing element with a main circular diaphragm provided on its edge with at least two recesses each forming a smaller diaphragm carrying resistors in a bridge circuit. The main diaphragm is preferably made of a semiconductor material and the resistors on the smaller diaphragms are diffused therein.

3,683,699

METHOD OF RETRIEVING MARINE LIFE AND MINERAL SPECIMENS FROM OCEAN S DEEPEST PARTS

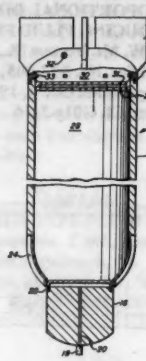
James C. Grady, Port Arthur, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed May 27, 1971, Ser. No. 147,477

Int. Cl. G01n 1/04

U.S. Cl. 73—421 R **12 Claims**

A capsule for obtaining samples of sea bottom material contains a molten sample gathering material. A ballast member at the lower end of the capsule causes the capsule to sink freely when dropped into the sea. An explosive device, preferably located in the ballast member, is detonated when the capsule reaches the sea bottom and ruptures the capsule. A piston within the capsule above the sample gathering material is driven downwardly by gas pressure to force the sample gathering material from the capsule into contact with the sea bottom. The sample gathering material has a density lower than the density of sea water and a freezing point higher than the temperature of the sea water whereby the sample gathering material freezes, occludes sea bottom material, and floats to the surface of the water.



3,683,700

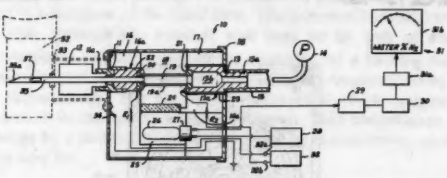
GAS ANALYZER

Andrew L. Wilfong, Route 1, Box 379, Tomball, Tex.

Filed Aug. 28, 1970, Ser. No. 67,696

Int. Cl. G01n 1/24

U.S. Cl. 73—421.5 R **22 Claims**



A gas analyzer for sampling and analyzing a gas is disclosed as including a sampling head and a sensing head. The sampling head conducts sampled amounts of gas to the sensing head, and includes two elongated, straight coaxial tubular members. One of the members is slidably mounted with a close fit in the other and the outer member has an aperture for admission of gas. A flow restriction means is disposed coaxially to the members to restrict the flow of the gas to a predetermined amount, and one of the members is movable from a first position in the other member where flow of gas is relatively restricted by the flow restriction means, to a second position where such flow is relatively free.

3,683,701

MULTIPORT SAMPLING VALVE

Adolph Peter Gunther, Woodhaven; Kenneth Gerard Hebel, Garnerville, both of N.Y., and Mark Allen Kuck, Montclair, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

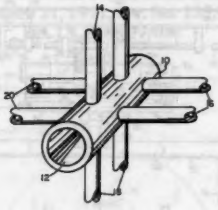
Filed Aug. 25, 1970, Ser. No. 66,773

Int. Cl. G01n 1/10, 1/22

U.S. Cl. 73—422 GC **12 Claims**

A multiport sampling valve for corrosive gases and liquids. The multiport sampling valve has a hollow barrel, a series of

pairs of arms projecting radially therefrom, and a plug inserted into and adapted for rotation in the barrel, the plug having a series of pairs of holes which are each alignable with each of



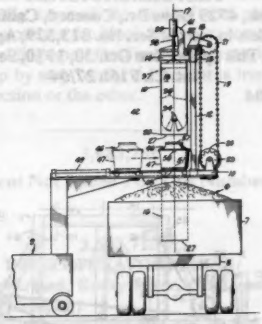
said pairs of arms to allow the passage of a gas from one arm of a pair through the plug and out the other arm of a second pair extending from the barrel to an analyzer.

3,683,702

SAMPLER FOR FRUITS OR VEGETABLES IN BULK AND METHOD OF SAMPLING FRUITS OR VEGETABLES IN BULK

Michael O'Brien; Wilson B. Goddard, and Rodney B. Williams, all of Davis, Calif., assignors to The Regents of the University of California

Filed April 5, 1971, Ser. No. 131,184
Int. Cl. G01n *1/08*
U.S. Cl. 73—423 R **15 Claims**



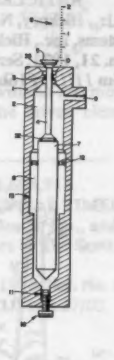
A sampler for a bulk body of fruits or vegetables includes a cylindrical tube arranged on a vertical axis and movable vertically down into the bulk body. The open, lower end of the tube has a cutting edge. Within the tube are gates movable to block the lower end. Arranged beneath the tube is a separator including an annular or conical member having a central opening smaller in diameter than the tube and having a periphery larger in diameter than the tube. The method involves plunging the tube into the bulk body of fruits or vegetables, the cutting edge severing a column of material. The gates are then closed and the tube and contained column are lifted out of the bulk body. The column contains many whole specimens and some cut specimens. The tube is then poised in axial alignment over the separator and the gates are opened. The falling material is separated by the separator into two parts, the cut specimens, on the outer periphery, falling onto and around the outer part of the separator to discard whereas the whole specimens, in a center core, pass through the central opening in the separator and preferably are caught in a receptacle. Only the material passing through the central opening is utilized as a sample.

3,683,703

PRESSURE GAUGE

Gustaf Lennart Liljeforss, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed March 23, 1970, Ser. No. 21,706
Claims priority, application Sweden, April 1, 1969, 4582/69
Int. Cl. G01l *7/22*
U.S. Cl. 73—403 **14 Claims**



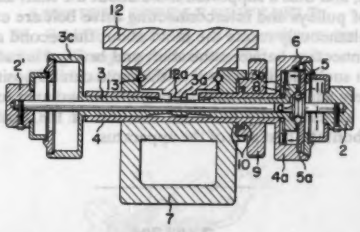
A pressure gauge comprises a housing, a main chamber in the housing partly filled with a liquid and a body floating in the liquid. A portion of the body extends through an opening in the housing. A fluid to be measured is introduced into the chamber above the liquid and its pressure is exerted on the surface of the liquid thus causing the body to assume a floated position. A scale is provided outside the housing and the position of the body, and thus the pressure in the measuring chamber, is indicated by the position of the body portion relative to the scale.

3,683,704

COARSE AND FINE ADJUSTMENT DEVICE OF THE TYPE USING THREE CONCENTRIC SHAFTS

Noboru Kuroha, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,792
Claims priority, application Japan, Aug. 26, 1969, 44/67077
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.52 **6 Claims**



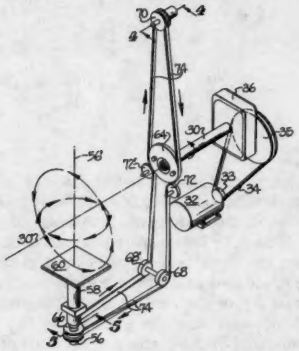
A coarse and fine adjustment device employs an assembly of three concentric shafts—a fine adjustment shaft, a drive shaft for moving an object supporting table, and a coarse adjustment shaft. A predetermined number of planetary balls are held by retaining surfaces provided by the respective shafts. The fine adjustment shaft is formed with an annular V-shaped groove. The balls are retained in the groove in engagement with the inclined surfaces thereof by inclined surfaces respectively provided on opposite sides of the balls by the drive and

coarse adjustment shafts. The angle of engagement of the retaining surface provided by the drive shaft differs from the angle of engagement of the retaining surface of the coarse adjustment shaft.

3,683,705
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES

Robert L. Campbell, Jr., Hickory, N.C., assignor to Automated Manufacturing Systems, Inc., Hickory, N.C.

Filed Jan. 21, 1971, Ser. No. 108,416
Int. Cl. F16m *11/12*; F16h *9/04*; B29c *5/04*
U.S. Cl. 74—16 **10 Claims**



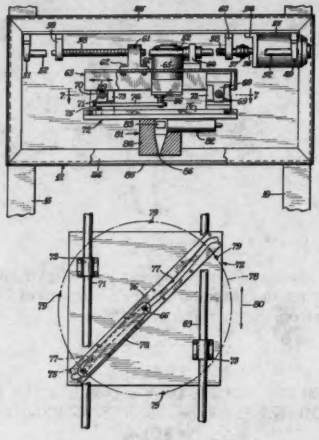
An apparatus for rotating a hollow mold about a pair of mutually perpendicular axes to cast a hollow plastic article. The apparatus includes a rotatable shaft defining a first axis and which carries an L-shaped bracket at one end, with one leg of the bracket extending radially from the shaft and the second leg extending generally parallel to the shaft. A mold support member is connected to the second leg and is rotatable about a second axis which perpendicularly intersects the axis of the shaft. An electric motor is provided for rotating the shaft, bracket, and thus a supported mold about the shaft axis, and a series of pulleys and interconnecting drive belt are employed to simultaneously rotate the mold about the second axis. The interconnection between the shaft and bracket is radially adjustable such that the center of the mold can be positioned at or closely adjacent the intersection of the two axes to thereby permit an essentially balanced rotation of the bracket and mold about the first axis of the apparatus.

3,683,706
DRIVE FOR A RECTILINEAR SCANNER FOR ORGAN IMAGING

William J. O'Neill, 459 N. Winston Dr., Palatine, Ill.

Filed Nov. 30, 1970, Ser. No. 93,607
Int. Cl. F16h *21/02*
U.S. Cl. 74—27 **5 Claims**

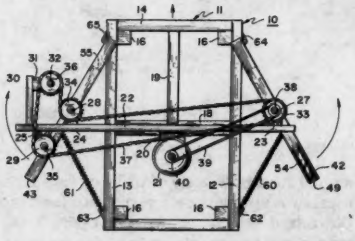
Drive mechanism for a rectilinear scanner for organ imaging in which a detector and its focusing collimator is reciprocated at a constant speed across and back over the patient's organ being examined and simultaneously being gradually and continuously moved in a direction at substantially right angles to the reciprocal movement to thereby uniformly scan the entire organ.



3,683,707
PROPULSION SYSTEM

Robert L. Cook, 4729 Olive Dr., Concord, Calif.

Continuation-in-part of Ser. No. 813,529, April 4, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,548
Int. Cl. F16h *27/04*
U.S. Cl. 74—84 **10 Claims**



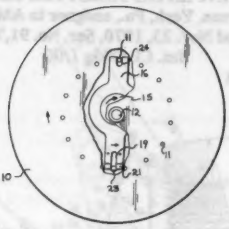
A propulsion system operative to propel a vehicle along a linear path. In one form of the invention, a wheel-equipped vehicle is propelled along a linear path by the change in position of the center of gravity of a rotatably driven composite mass or weight which is subdivided into two counterrotating mass members. Each mass member is slidably displaceable along a rotatably driven carrier rotatably supported on the chassis of the vehicle, and the mass member is connected to the chassis through a tension spring. As the carrier rotates, the mass member mounted therein has its center of gravity shifted with respect to the axis of rotation of the carrier such that the center of gravity of the mass member lies almost entirely within one particular predetermined segment of the arcuate path described by the carrier and which segment is generally of the order of 180°.

3,683,708

MACHINE FOR EMBODYING STEP BY STEP ROTARY MOTION

Raymond J. Dwyer, 4737 Secor Rd., Toledo, Ohio

Filed April 21, 1971, Ser. No. 135,917
Int. Cl. F16h *27/04*
U.S. Cl. 74—84 6 Claims



Mechanism for imparting step by step or intermittent rotary motion to a table or the like. On the underside of the table is a circular row of rollers of an uneven number. Disposed transversely of the underside of the table is an actuating arm, in the center of which is a driven rotary eccentric cam. Notches in opposite ends of the arm recurrently engage rollers in said row in response to rotation of the eccentric cam. Beneath one of said notches is fixed a block similarly notched and projecting a distance forwardly beyond the end of the actuating arm. Disposed in the notch in the block is a roller rotatable about a fixed axis. Depending upon the direction of rotation of the eccentric cam step by step rotary movement is imparted to the table in one direction or the other.

3,683,709

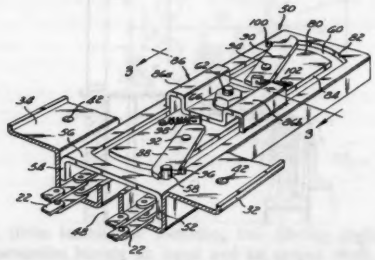
Patent Not Issued For This Number

3,683,710

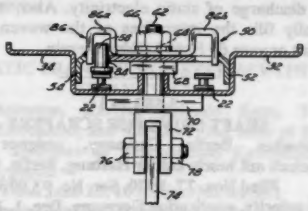
DOOR OPERATOR MEANS

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company

Filed June 29, 1970, Ser. No. 50,845
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.21 11 Claims



A power driven operator for a closure or the like where a driven element is moved in a reciprocating manner between fully opened and fully closed limit positions. The power driven operator is interconnected to the driven element to provide



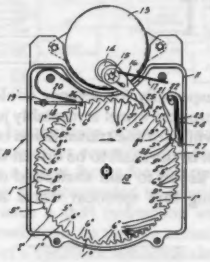
back and forth movement without lost motion even during any momentary tendency of the driven element to overrun the drive.

3,683,711

SEQUENTIAL TIMER

Joe Bowman, Fort Myers Beach, Fla., and James D. Edwards, Russiaville, Ind., assignors to The Scott & Fetzer Company, Kokomo, Ind.

Filed June 4, 1970, Ser. No. 43,371
Int. Cl. F16h *27/02*
U.S. Cl. 74—142 20 Claims



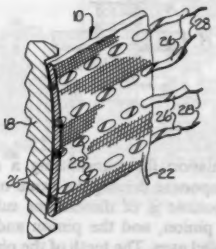
A timer includes a disc-type of cam having circular cam tracks thereon for coaction with switches, all carried by the housing. A motor is mounted on the housing and has an eccentric that acts through a drive pawl, a stop pawl or preferably two stop pawls precluding reverse cam rotation, there being a series of peripheral teeth on the cam on which the pawls act, the teeth having a variable pitch produced by their being of non-uniform angular size.

3,683,712

LINT FREE SPINDLE DRIVE BELT

Nicholas W. Schiffli, Charlotte, N.C., assignor to Barber Manufacturing Company, Charlotte, N.C.

Filed March 2, 1971, Ser. No. 120,091
Int. Cl. F16g *1/00*; B29d *29/00*
U.S. Cl. 74—231 S 14 Claims



A drive belt for use on a yarn spinning frame or the like, and which is adapted to run substantially lint free. The belt com-

prises interwoven cotton and nylon yarns, with at least several of the yarns including an electrically conductive component in either continuous or staple filament form blended therewith to facilitate discharge of static electricity. Also, a cured resin substantially fills the interstices of the woven material to prevent lint or yarn fly from lodging therein.

3,683,713

SHAFT DRIVE FOR SCRAPERS

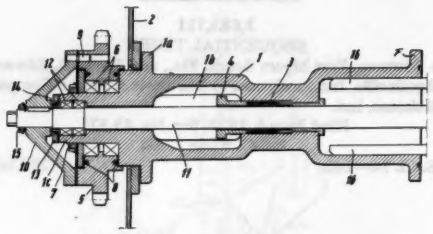
Peter Brucher, Berlin, Germany, assignor to Borsig Gesellschaft mit beschrankter Haftung, Berlin, Germany

Filed Nov. 27, 1970, Ser. No. 93,073

Claims priority, application Germany, Dec. 1, 1969, P 19 61 697.8

Int. Cl. F16h *55/30*; F16d *3/56*

U.S. Cl. 74—243 R **4 Claims**



A shaft drive, especially for scraper coolers, in which the drive conveying sprocket wheel is rotatably journaled on a stationary trunnion while for the transmission of the torque from the sprocket wheel to the shaft to be driven there are provided entraining means keyed to said shaft, and overload breaking pin means coupling said sprocket wheel to said entraining means.

3,683,714

EAR TRANSMISSIONS

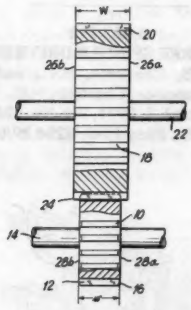
Giovanni Castellani, Via Orlandi 9, Modena, Italy

Filed Nov. 16, 1970, Ser. No. 89,592

Claims priority, application Italy, Dec. 1, 1969, 31166 A/69

Int. Cl. F16h *1/06, 1/16, 55/04*

U.S. Cl. 74—414 **7 Claims**



A gear transmission for transmitting a drive between a pinion and a component driving the same or driven thereby. This latter component is of dimensions substantially larger than that of the pinion, and the pinion and its driven component have parallel axes. The teeth of the pinion have a width parallel to its axis substantially less than the width of the teeth of the other component parallel to the axis of the latter. The pinion is preferably made of steel and case-hardned, while the other component is provided with surface-hardened teeth, such as induction or flame-hardened teeth.

3,683,715

Patent Not Issued For This Number

3,683,716

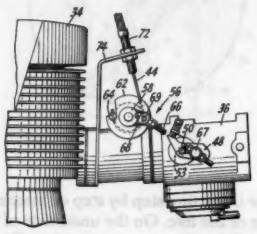
CONSTANT RATIO THROTTLE CONTROL

George F. Anderson, York, Pa., assignor to AMF Incorporated

Filed Nov. 23, 1970, Ser. No. 91,717

Int. Cl. G05g *1/00*

U.S. Cl. 74—491 **3 Claims**



In a vehicle having a carburetor that includes a throttle valve, a hand lever accelerator control and an accelerator cable connected to the hand lever, apparatus for transmitting the movement of the hand lever to the carburetor throttle valve through the accelerator cable which comprises, an arm pivotally mounted to the throttle valve, means biasing said arm toward the carburetor idle position, a pulley mounted for pivotal movement and operatively connected to said arm for rotating the same, and means mounting the accelerator cable to said pulley, wherein said pulley is pivoted by manipulation of the hand lever and the pivotal movement is transmitted to the throttle valve arm.

3,683,717

SAFETY STEERING FOR MOTOR VEHICLES, ESPECIALLY FOR PASSENGER MOTOR VEHICLES

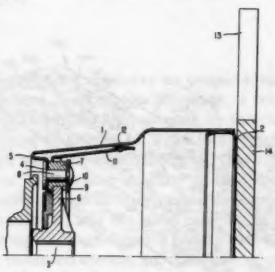
Karl Wilfert, Gerlingen-Waldstadt, and Rudolf Andres, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 24, 1970, Ser. No. 92,340

Claims priority, application Germany, Nov. 27, 1969, P 19 59 497.9

Int. Cl. B62d *1/04*

U.S. Cl. 74—552 **27 Claims**



A safety steering for motor vehicles, especially for passenger motor vehicles with an impact pot mounted between

the steering wheel and the steering column, whereby the impact pot is connected with the steering column by way of an elastic element which is either of unitary or of multi-partite construction.

3,683,718

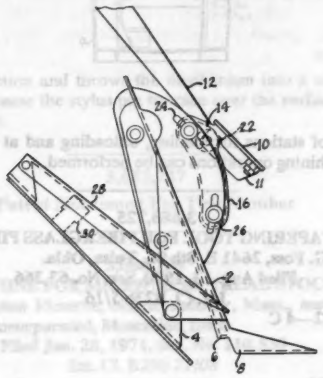
INSTANT ACTION BRAKE FOR VEHICLES

Wyly Kenneth Crowder, 3255 Windcroft Dr., Pontiac, Mich.

Filed May 22, 1970, Ser. No. 39,700

Int. Cl. G05g 1/16

U.S. Cl. 74—562.5 **4 Claims**



An auxiliary brake apparatus whereby operator control of a vehicle is continuously maintained through a foot engaged pivotal pedal directly associated with cam means to obviate reaction time in cases of emergency to stop the vehicle. The cam means includes a quick response cam surface for fast engagement with the vehicle brake mechanism as well as a slower response can surface to prevent wear on the brake mechanism.

3,683,719

REVERSING TRANSMISSION WITH DUAL INPUTS

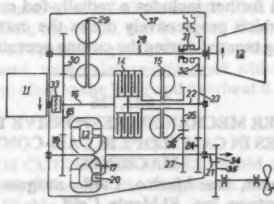
Hermann Gros, Friedrichshafen, Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed May 13, 1970, Ser. No. 36,754

Claims priority, application Germany, May 14, 1969, P 19 24 482.0

Int. Cl. F16h 37/06

U.S. Cl. 74—661 **7 Claims**



A drive installation including two driving engines and a transmission having an input and an output shaft. The first driving engine is connected to the input shaft by way of an engageable clutch; such as a one-way clutch or a clam clutch. The second driving engine is connected to both the input shaft of the transmission by way of a first engageable coupling and to the output shaft of the transmission by way of a second engageable coupling. The transmission is operable to selectively connect either engine or both engines for driving the output of the transmission.

3,683,720

AUTOMATIC TRANSMISSION SYSTEM WITH TIME-DELAY CIRCUIT

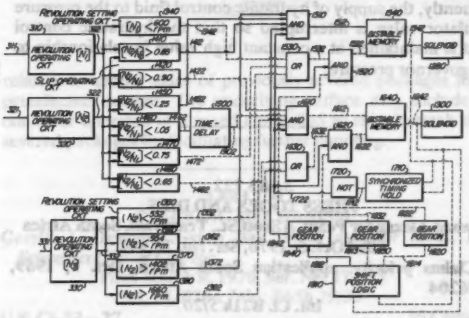
Hisato Wakamatsu, Kariya; Takaaki Kato, Toyohashi; Mamoru Kawakubo, and Katsunori Ito, both of Kariya, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed June 23, 1970, Ser. No. 49,021

Claims priority, application Japan, June 26, 1969, 44/50882

Int. Cl. F16h 47/08; B60k 23/00

U.S. Cl. 74—731 **2 Claims**



An automatic transmission system wherein the amount of slip in a torque converter constituting a part of the transmission is utilized as a major factor for determining a shift point, and logic circuitry is incorporated to provide a means for this purpose and to issue a shift instruction which best suits the gear changing conditions, so that an actuator is brought into action by means of a hydraulic actuation circuit to accomplish the gear change, and a time-delay circuit is also incorporated in the said logic circuitry.

3,683,721

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS

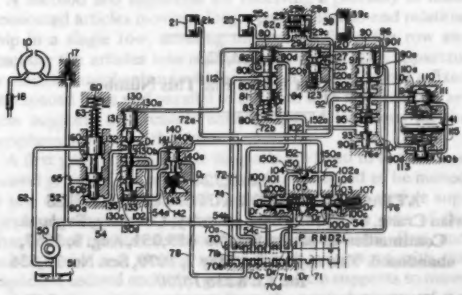
Sumio Uozumi, and Keiji Kogaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Aug. 24, 1970, Ser. No. 66,274

Claims priority, application Japan, Sept. 9, 1969, 44/71015; Dec. 30, 1969, 44/105482

Int. Cl. B60k 21/02

U.S. Cl. 74—869 **4 Claims**



A hydraulic control system for automatic transmissions includes a torque converter, a gear train consisting of planetary

gears and a hydraulic servo system for engaging the gear train at a certain drive gear ratio. The hydraulic servo system comprises a shift valve group, a throttle valve, a governor valve, a manual selector valve, a pressure regulator valve, an auxiliary regulator valve and a throttle relay valve arranged in an interconnected network. When the manual selector valve is placed in the "D" range, the governor pressure and the throttle pressure act on the auxiliary regulator valve to change the supply of pressurized hydraulic fluid to the pressure regulator valve. The hydraulic control pressure is decreased as the governor pressure increases, and at the same time, the control pressure is increased with the increase in the throttle pressure. When the throttle pressure drops below a certain value in the application of the engine brake and when shifting the manual selector valve from the "D" range to the "2" or "L" range, the throttle relay valve is actuated by the throttle pressure and actuation of the auxiliary regulator valve is blocked. Consequently, the supply of hydraulic control fluid to the pressure regulator valve is interrupted so that the hydraulic control fluid is maintained at a constant high value in relationship to the governor pressure.

3,683,722

PRESS TOOLS AND DIES

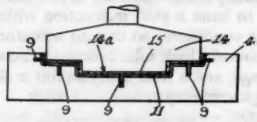
Edward Alexander Pears, 4 Scott St., Transvaal, South Africa

Filed Oct. 5, 1970, Ser. No. 77,940

Claims priority, application South Africa, Oct. 9, 1969, 69/6204

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R **4 Claims**



A method is disclosed for producing dies, tools and the like adapted for use in conjunction with a press wherein a backing element having the general configuration of the would be die is provided with a thin skin of polymeric material having a profile which corresponds exactly in shape and dimensions to the integers of the would be die. A particular method of forming the skin on the backing element is also disclosed.

3,683,723

Patent Not Issued For This Number

3,683,724

ATTACHMENTS FOR AUTOMATIC LATHES

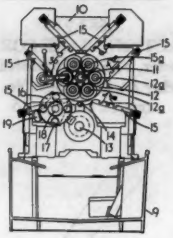
Brian Crane, 83 Browns Lane, Allesley, Coventry, England

Continuation-in-part of Ser. No. 659,051, Aug. 8, 1967, abandoned. This application May 7, 1970, Ser. No. 35,536

Int. Cl. B23b *15/00*

U.S. Cl. 82—2.5 **5 Claims**

An automatic lathe is provided with an attachment whereby workpieces transferred from main workpiece holders can be machined on their faces which are inaccessible before separation from a bar stock from which they are made, with the attachment having an indexible member movable between a plurality of stations for loading, unloading and at which stations machining operations can be performed.



3,683,725

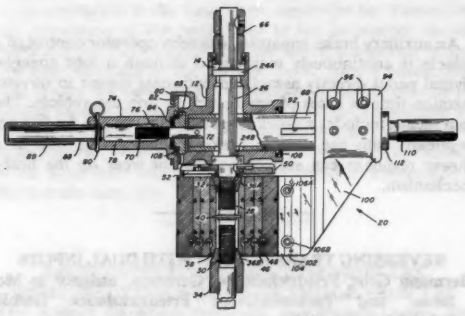
TAPERING TOOL FOR FIBERGLASS PIPE

Rudolph G. Foss, 2641 E. 8th St., Tulsa, Okla.

Filed Aug. 13, 1970, Ser. No. 63,366

Int. Cl. B23b *5/16*

U.S. Cl. 82—4 C **7 Claims**



A tapering tool having an expandable collet over which the end of a fiberglass pipe is received incorporates a mechanism to lock an expandable collet in a fixed position to prevent same from expanding outwardly and becoming tightly wedged against the interior of the pipe during the cutting cycle. The tapering tool further includes a radially-fed cutter blade arrangement which progressively draws the cutter blade onto the pipe being tapered during the cutting operation.

3,683,726

FOLLOWER MECHANISM RESPONSIVE TO ABRUPT CHANGES IN CAM SLOPE IN CAM-CONTROLLED MACHINES

Paul J. Weaver, San Marino, Calif., assignor to Automatic Control Systems, Inc., El Monte, Calif.

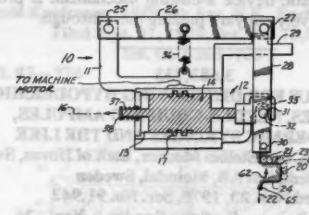
Filed Dec. 28, 1970, Ser. No. 101,959

Int. Cl. B23b *3/28*

U.S. Cl. 82—14 R **6 Claims**

A follower mechanism for cam-controlled machine tools which is responsive to abrupt changes in the slope of the control cam. A two-link lever system carries a bearing pin and a stylus pin. The bearing pin is engaged to the sensor element of the follower mechanism, and when it is moved sufficiently far

laterally in either direction by encountering an abrupt slope, such as a rising or falling shoulder relative to its travel, stops



the cam motion and throws the mechanism into a condition which will cause the stylus pin to trace over the surface of the abrupt slope.

3,683,727

Patent Not Issued For This Number

3,683,728

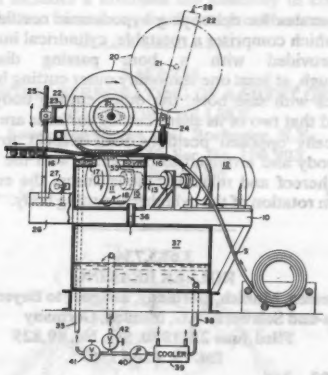
MACHINE FOR MICRO SIPED TREAD STOCK

Forrest Clayton Meserve, North Andover, Mass., assignor to Bandage Incorporated, Muscatine, Iowa

Filed Jan. 28, 1971, Ser. No. 110,539

Int. Cl. B29b *21/08*

U.S. Cl. 83—12 **10 Claims**



A machine for making siping slashes in a continuous strip or ribbon of sheet material of indefinite length, such as pre-cured natural or synthetic tire stock, and in which is incorporated a new and improved lubricating system adapting the machine to operate upon hard, tough elastomeric stock which otherwise has a tendency to cling to the knife and overheat it.

3,683,729

METHOD OF CUTTING ARTICLES FROM A STRIP

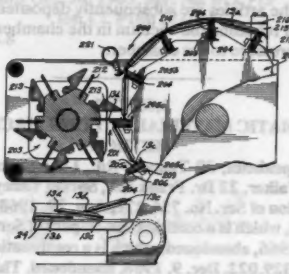
Charles E. Cloud, Wilmette, Ill., assignor to Cloud Machine Corporation, Skokie, Ill.

Division of Ser. No. 852,518, May 7, 1969, which is a continuation-in-part of Ser. No. 504,709, Oct. 24, 1965, abandoned. This application Dec. 21, 1970, Ser. No. 100,089

Int. Cl. B65h *29/24, 34/08, 29/66*

U.S. Cl. 83—24 **14 Claims**

A method of cutting interconnected packages or articles from a continuous strip is characterized by the step of restraining and controlling the movement of a leading one of the articles or packages while a trailing edge of that package is severed from the strip and then releasing that package in a controlled manner to deposit the same onto an underlying article receiving surface with one side of that package oriented



relative to similar sides of previously severed packages in a preselected manner. The underlying surface may include a conveyor operated at a speed controlled to shingle-stack the severed packages for facilitating further handling.

3,683,730

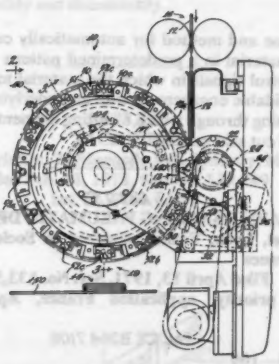
STACKING MECHANISM

Gerald J. Driessen, Green Bay, Wis., assignor to L. D. Schreiber Cheese Co., Inc.

Filed March 9, 1970, Ser. No. 17,363

Int. Cl. B26d *7/06*; B65h *29/32*

U.S. Cl. 83—27 **35 Claims**



A method and apparatus for receiving a plurality of interconnected articles moving along a path in end-to-end relationship in a single row, severing the articles from the row and stacking the articles into a plurality of stacks. The apparatus or stacking mechanism includes a drum rotating about a fixed axis spaced from and parallel to the path with a plurality of article supports at circumferentially spaced locations on the peripheral surface of the drum.

A first group of the article supports are fixed to the drum, a second group of the article supports are adapted to be moved to one side of the drum and a third group of the article supports are adapted to be moved to the opposite side of the drum. The transfer mechanism further includes first and second cams and biasing means which cooperate with the respective second and third groups of article supports to move the respective article supports from the central portion of the drum to the respective sides of the drum and return the articles to the central portion of the drum during each revolution of movement of the drum.

The respective articles are attached to each of the article supports by producing a vacuum within a chamber in each of the article supports as the article support is located adjacent the article in the single row. The vacuum is maintained in the chamber during a portion of the cycle of revolution of the drum and the articles are subsequently deposited in a plurality of stacks by releasing the vacuum in the chamber and applying a positive pressure to the chamber.

3,683,731

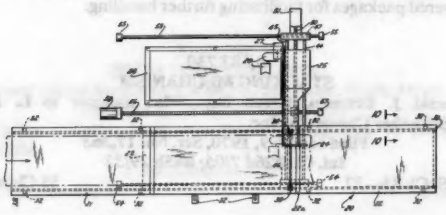
AUTOMATIC MATERIAL CUTTING MACHINE AND METHOD

Henry Oppenheim, 30 Tanners Rd., Lake Success, N.Y., and Jonas Walker, 22 Dr. Frank Rd., Spring Valley, N.Y.

Division of Ser. No. 756,271, Aug. 29, 1968, Pat. No. 3,587,378, which is a continuation-in-part of Ser. No. 583,615, Oct. 3, 1966, abandoned, which is a continuation-in-part of Ser. No. 329,022, Dec. 9, 1966, abandoned. This application June 19, 1970, Ser. No. 47,765

Int. Cl. B26d *5/30*

U.S. Cl. 83—56 5 Claims



A machine and method for automatically cutting substantially flat material in a predetermined pattern in response to remote control signals in which the material to be cut is supported in slidable engagement with an underlying surface having an opening through which a cutting element can project to engage and cut said material.

3,683,732

YARN HANDLING PNEUMATIC DEVICE

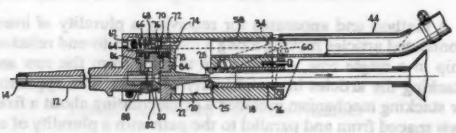
Paul Juppet, Lyon, France, assignor to Societe Rhodiaceta, Paris, France

Filed April 13, 1971, Ser. No. 133,579

Claims priority, application France, April 16, 1970, 7013708

Int. Cl. B26d *7/06*

U.S. Cl. 83—100 16 Claims



A yarn handling pneumatic device including a casing having a distribution chamber therein, a delivery conduit adapted to pick up yarn at one end to move the yarn through a delivery tube and an egress tube co-axially aligned in the device to a yarn collecting device, and a lever for pivotally sliding the egress tube to therefore control the area of a control orifice defined between the outlet of the delivery tube and the inlet lip of the egress tube in the distribution chamber, the inlet lip having an inner surface configuration defined by a surface of revolution having an arcuate generatrix with a point of inflexion. The egress tube is advanced toward the delivery tube to define a restricted position for initially introducing yarn into the pneumatic device and is thereafter moved away from the delivery tube to increase traction on the yarn as it passes through the pneumatic device. In a modification of the yarn handling pneumatic device a cutting mechanism is provided therein to selectively cut yarn passing therethrough.

3,683,733

APPARATUS FOR DESTROYING HYPODERMIC NEEDLES, NEEDLE-EQUIPPED AMPULES, HYPODERMIC SYRINGES AND THE LIKE

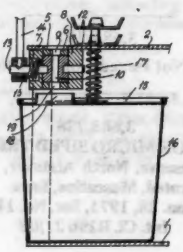
Bengt Olof Johan, and Stellan Morner, both of Hovas, Sweden, assignors to Mediplast AB, Molndal, Sweden

Filed Nov. 23, 1970, Ser. No. 91,942

Claims priority, application Sweden, Nov. 26, 1969, 16241/69

Int. Cl. B26d *1/12*

U.S. Cl. 83—199 8 Claims



An apparatus for destroying hypodermic needles and like objects, which comprises a rotatable, cylindrical inner cutting body, provided with a bore passing diametrically therethrough, at least one stationary outer cutting body which cooperates with said bore, the outer cutting body being so positioned that two of its sharp cutting surfaces are located at diametrically opposed positions with respect to the inner cutting body and arranged to cooperate with the cylindrical surface thereof and relatively move across the ends of said bore upon rotation of the cylindrical cutting body.

3,683,734

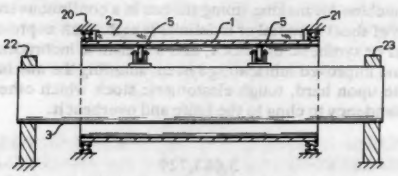
ROLLER BEARING

Uwe Claussen, Munich, Germany, assignor to Bayerische Berg-Hutten-und Salzwerke AG, Munich, Germany

Filed June 25, 1970, Ser. No. 49,829

Int. Cl. B26d *1/40*

U.S. Cl. 83—345 18 Claims



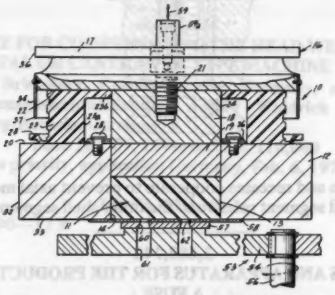
A bearing for a rotating roller or the like in which, for example, the roller is eccentric or provided for eccentric extensions and periodically subjected to stress from the outside, said bearing being provided with at least one bearing point which is located between the ends of the roller and a distance therefrom, and which bearing then supports the roller when stress occurs between its ends. The invention finds particular utility in bearings for rollers of cutting machines such as cross cutters.

3,683,735

UNIVERSAL URETHANE DIE ASSEMBLY AND METHOD OF AND APPARATUS FOR USING SAME

Howard S. Achler, 1348 Berry Lane, Flossmoor, Ill., and Harold Kaufmann, 1919 6th Ave. N.E., Rochester, Minn.

Filed Sept. 21, 1970, Ser. No. 73,859
Int. Cl. B26d 7/26
U.S. Cl. 83—374 17 Claims



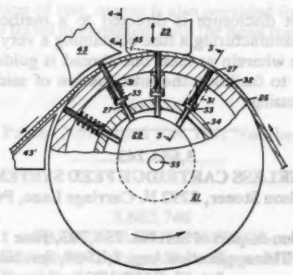
A universal urethane die assembly for use in blanking, forming, drawing, embossing and the like. The assembly includes a urethane pressure pad which is rectangularly shaped with rounded corners. The retaining ring which surrounds and supports the pressure pad has unique dimensional requirements. Other features of the die assembly include a visual indicator for ascertaining the degree of deflection of the die assembly. Also included is a turret punch press which has a single urethane die assembly in lieu of an upper turret. A punching unit which includes a urethane die assembly in conjunction with a die button for use on presses and press brakes.

3,683,736

ULTRASONIC PERFORATING OF A SHEET OF FILM, PAPER OR THE LIKE

Guenter H. Loose, 1669 Lake Ave., Rochester, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,993
Int. Cl. B26f 1/08
U.S. Cl. 83—16 12 Claims



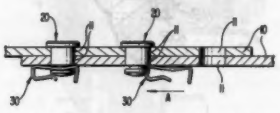
A hole is punched through a sheet of photographic film or paper by positioning the sheet with one side in contact with a punch, and applying an ultrasonically vibrating horn to the opposite side to force the punch through the sheet. A long web of such material can be passed continuously past a horn while a series of punches are successively brought into register with the horn to pierce a series of spaced holes. Such a series of punches can be carried by a rotating cylindrical anvil over which the web is passing. Cores from the holes are sucked away from the operation, any cores remaining within punches first being expelled by fingers within the punches. The punches can move back and forth radially of the cylindrical anvil. A recess in the horn is adapted to receive the protruding ends of punches.

3,683,737

DETACHABLE TWO-PARTITE CONNECTING ARRANGEMENT

Hans Oetiker, 21 Oberdorfstrasse, Horgen, Switzerland

Filed Oct. 30, 1969, Ser. No. 872,715
Int. Cl. F16b 21/18
U.S. Cl. 85—8.8 11 Claims



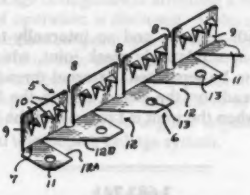
A two-partite connection for structural parts of same thickness and provided with apertures adapted to be aligned, which includes a plug-type member provided with a groove in its shank portion at a location of about twice the thickness of a structural part; a locking member consisting of a base body with an elongated channel of a size corresponding to the reduced shank portion, left by the groove, enables displacement in the direction of the channel while a spaced tongue-like projection connected to the base body elastically engages the end face of the shank portion to produce a frictional force opposing assembly and disassembly.

3,683,738

TACK STRIP

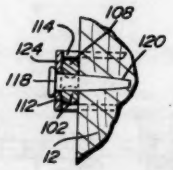
Vasilios N. Kyriakos, 27 Magnolia Rd., Sudbury, Mass.

Filed Feb. 26, 1971, Ser. No. 119,249
Int. Cl. F16b 15/00
U.S. Cl. 85—13 2 Claims



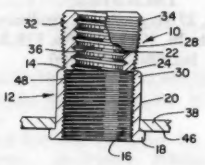
A tack strip is disclosed of the type formed from a length of flexible, non-resilient metal longitudinally folded to provide first and second angularly disposed flanges, both serrated to provide a series of tabs separated by notches with the first flange to underlie a margin of upholstery material and the second flange provided with a series of projections overlying the first flange and constituting anchoring tacks when the second flange is folded over the driven flat against the material. The invention provides each tab of the first flange with a hole positioned always to receive one projection and the notches of the first flange to receive the other projections unless the strip is so bent as to close them.

3,683,739
FENCE REPAIR SYSTEM
George W. Garretson, Route 3, Box 260, Ocala, Fla.
Filed June 10, 1970, Ser. No. 45,176
Int. Cl. F16b *15/00*
U.S. Cl. 85—49 2 Claims



A repair assembly including a first post repair structure and a second repair structure for attaching horizontal fence members to fence posts. The first structure includes an upstanding split clamp sleeve with downwardly divergent bracing legs for clamping about the rotted lower end of a fence post and embedding in ground anchored concrete and the second structure includes an endless, formed and tensioned wire loop arranged to twice horizontally embrace the side of a corresponding fence post remote from the related fence boards and twice vertically embrace the fence board side remote from the corresponding fence post.

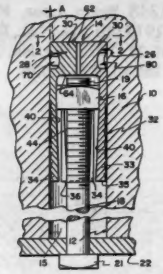
3,683,740
THREADED BLIND FASTENER
Alan Martin, Box 262, Sharon, Mass.
Continuation-in-part of Ser. No. 15,683, March 2, 1970, abandoned. This application Jan. 28, 1971, Ser. No. 110,467
Int. Cl. F16b *1/00, 13/06*
U.S. Cl. 85—72 10 Claims



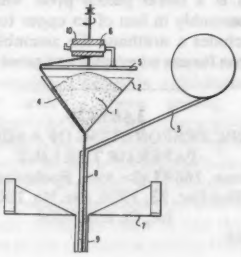
An anchor with a sleeve and an internally threaded base joined together at a relatively weak joint, which allows the sleeve and base to be separated. External threads on the base and internal threads on the sleeve enable the base to screw into the sleeve when the joint is broken and the base is turned into the sleeve.

3,683,741
MINE ROOF EXPANSION SHELL ASSEMBLY
George H. Pete, 2519 W. Macon, Decatur, Ill.
Filed April 6, 1970, Ser. No. 25,987
Int. Cl. F16b *13/04*
U.S. Cl. 85—88 4 Claims

A mine roof expansion shell assembly including two identical and cooperating shell segments, each having a base portion and an elongated wall portion which extends from the base portion and which has an increasing thickness in a direction away from the base portion. The base portion of each shell segment has a projection extending outwardly therefrom laterally of the shell segment and a recess therein which extends inwardly of the base portion, also in a direction laterally of the shell segment. The projection and recess are adapted to mate with the recess and the projection in the base portion of the cooperating shell segment, when the shell segments are arranged to form the shell assembly, and in such a way that the projections and recesses cooperate to prevent axial movement of one shell segment relative to the other shell segment.

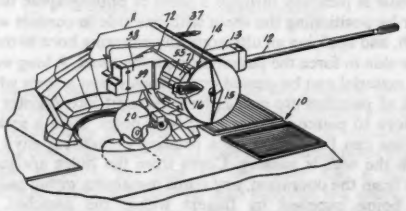


3,683,742
PROCESS AND APPARATUS FOR THE PRODUCTION OF A FUSE
Wilhelm Rohde, and Werner Helfgen, both of Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Filed May 1, 1970, Ser. No. 33,684
Claims priority, application Germany, May 2, 1969, P 19 22 374.6
Int. Cl. F42b *33/10*; C06c *5/08*
U.S. Cl. 86—1 R 25 Claims



The present disclosure is directed to a method and apparatus for manufacturing a fuse containing a very fine, dust-like explosive wherein at least one thread is guided through the explosive to facilitate the introduction of said explosive into the fuse casing.

3,683,743
LINKLESS CARTRIDGE FEED SYSTEM
Eugene Morrison Stoner, 2292 N. Carriage Lane, Port Clinton, Ohio
Continuation-in-part of Ser. No. 736,703, June 13, 1968, abandoned. This application Aug. 1, 1969, Ser. No. 850,315
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 D 15 Claims



A cartridge feed system for use in connection with automatic guns which utilizes a pair of rotating drums adjacent

respective breech openings of the gun. Each drum carries a plurality of radially arranged cartridges held in multi-cartridge clips. The cartridges are fed one at a time into a selected breech opening by a feed mechanism activated by the reciprocating movement of the bolt carrier of the gun and by a spring-loaded feeder-adapter adjacent the breech. An indexing system allows the drums to be automatically selectively rotated to bring new clips into position adjacent a breech opening.

3,683,744

DEVICE FOR COMPENSATING THE HEAD WEIGHT ON PORTAL OR CANTILEVER TYPE MACHINE TOOLS

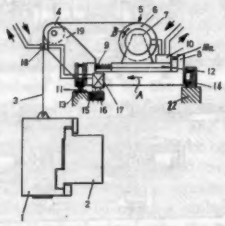
Gunter Briesofsky, Coburg/Bavaria, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg/Bavaria, Germany

Filed Jan. 27, 1971, Ser. No. 110,040

Claims priority, application Germany, Feb. 6, 1970, P 20 05 554.3

Int. Cl. B23b *47/26*

U.S. Cl. 90—11 F **8 Claims**



A device for counterbalancing a head slidably mounted on a crossrail in which a cable is secured at one end to the head and the other end of which cable is secured to a cable winch exerting a constant pull on the cable and the head, the winch is resiliently, slidably mounted in the direction of cable pull on a carriage which carriage travels parallel to the direction of travel of the head on the cross rail, means including a feeler sensing the sliding movement of the winch in the cable pull direction is provided for controlling the direction of rotation of the cable winch so as to maintain the winch in a predetermined position of rest, means is also provided for maintaining the carriage travel in alinement with the head travel.

3,683,745

Patent Not Issued For This Number

3,683,746

FASTENER DRIVING TOOL

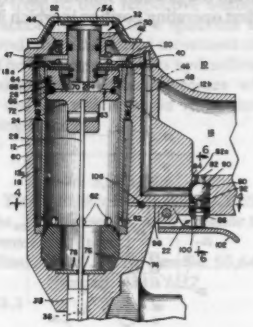
Howard B. Ramspeck, Chicago, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Continuation of Ser. No. 708,330, Feb. 26, 1968. This application June 25, 1970, Ser. No. 56,062

Int. Cl. F01l *25/06*

U.S. Cl. 91—263 **7 Claims**

A pneumatically operated automatically cycling fastener driving tool includes a housing having a cavity defining a fluid reservoir. A cylinder is provided in the housing for slidably receiving a piston therein. A cylinder valve is provided for controlling the admission of fluid through and the exhaustion of fluid from the one end of the cylinder in response to the exhaustion of fluid from the cylinder valve and the admission of fluid thereto. A return fluid chamber provides for the return stroke of the piston and communicates with the cylinder. Suitable valve means are provided for supplying fluid to the return fluid chamber when the piston is near the end of its drive stroke. Control means are provided for cycling the fluid



between the cylinder valve and the return fluid chamber to provide for repetitive cycling of the fastener driving tool.

3,683,747

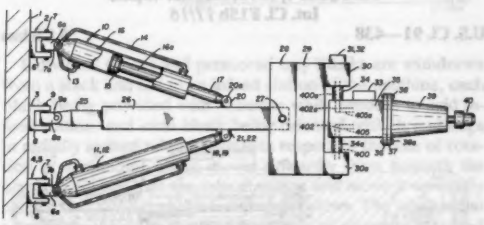
MANIPULATOR AND MANIPULATOR CONTROL SYSTEM

Robert Halsey Pettit, Huntington, N.Y., assignor to Sperry Rand Corporation

Filed Feb. 9, 1970, Ser. No. 9,758

Int. Cl. F15b *11/16*

U.S. Cl. 91—413 **23 Claims**



A powered, remotely controllable manipulator system having a novel linkage configuration affording a maximum degree of flexibility of operation is disclosed. A plurality of telescoping linkage elements cooperates to provide reproducible angular motion and extension and contraction of the manipulator structure. The structure supports a powered gimbal system permitting independent angular adjustment of a tool mounted thereupon over and above the angular adjustability supplied by the powered telescoping linkage system.

3,683,748

HYDRAULIC SYSTEM

Willy Mahl, Ditzingen, and Walter Werner, Waibligen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 9, 1970, Ser. No. 79,482

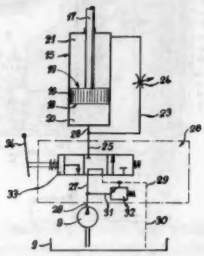
Claims priority, application Germany, Oct. 15, 1969, P 19 51 833.3

Int. Cl. F15b *15/17*

U.S. Cl. 91—416 **10 Claims**

A piston is slidably accommodated in a cylinder and subdivides the interior thereof into a first and a second chamber located at opposite axial sides of the piston. A supply conduit communicates with the first cylinder chamber. A source of pressurized fluid includes a pressure conduit and a fluid reser-

voir includes a return conduit. A control unit is connected with all of these conduits and includes a control member slidable between a neutral position in which it disconnects the supply conduit from the pressure conduit and from the return flow conduit, a first operating position in which it connects the



supply conduit with the pressure conduit while disconnecting it from the return flow conduit, and a second operating position in which it connects the supply conduit with both the pressure conduit and the return flow conduit. A throttling passage connects the cylinder chambers with one another.

3,683,749

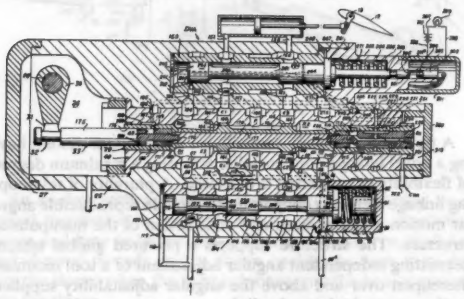
HYDRAULIC CONTROL MEANS

Fred R. Bayles, Dallas, Tex., assignor to LTV Electrosystems, Inc., Dallas, Tex.

Filed June 4, 1970, Ser. No. 43,325

Int. Cl. F15b *11/16*

U.S. Cl. 91—438 **5 Claims**



A hydraulic control device for controlling the operation of a reversible hydraulic motor device, such as a hydraulic ram, which has a deactivating valve assembly which provides a fluid bypass passage across the fluid inlet and passages of the ram cylinder to render the hydraulic ram inoperative in the event of malfunction of the control device. An apparatus for operating a controlled member, such an aileron, spoiler or the like, of an aircraft which includes a plurality of hydraulic motor devices having separate control means for individually controlling the motor devices, the control devices having means for deactivating the motor devices upon the malfunction of the control devices so that the motor device whose control device has malfunctioned or is inoperative will not impede the operation of the controlled member by the other motor devices whose control devices still function properly.

3,683,750

Patent Not Issued For This Number

3,683,751

FLUIDPRESSURE COMMUNICATION PASSAGES IN A MULTIPLE RADIALCHAMBER FLUIDHANDLING DEVICE

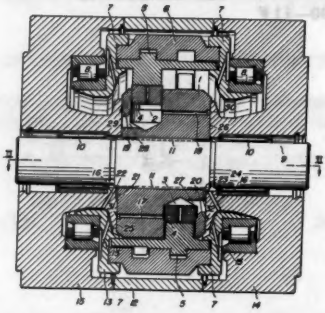
Karl Eickmann, 2420 Ishiki, Hayama-machi, Kanagawa-ken, Japan

Filed Dec. 29, 1969, Ser. No. 888,231

Claims priority, application Austria, Dec. 27, 1968, 12648/68

Int. Cl. F01b *1/06, 3/00, 13/06*

U.S. Cl. 91—486 **10 Claims**



The stator of a fluidhandling device has inner control faces forming clearances with end faces of a rotor. The fluid pressures in clearances at opposite ends of the rotor, which has two axially spaced groups of angularly spaced working chambers for radial pistons, are equalized by communication passages connecting each working chamber near one clearance with the respective other clearance.

3,683,752

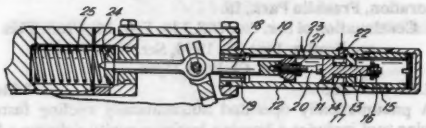
MULTIPOSITION FLUID-OPERABLE PISTON AND CYLINDER UNIT

Anthony Eugene Joseph Martin, 11 The Glade, Birmingham, England

Filed Sept. 17, 1970, Ser. No. 73,063

Int. Cl. F01b *9/02*

U.S. Cl. 92—13.51 **6 Claims**



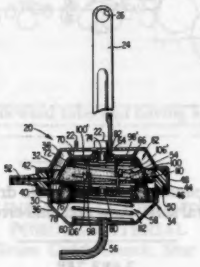
A multiposition piston/cylinder unit includes a pair of pistons slidable in a cylinder. One piston has the ends of its stroke determined by interacting adjustable abutments thereon and in the cylinder. The other piston has an adjustable abutment for abutting the first piston. The output of the unit taken from the second piston by a rod.

3,683,753

DUAL DIAPHRAGM SHORT TRAVEL ACTUATOR

Jesse R. Johnson, Gowanda, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Feb. 9, 1971, Ser. No. 9,793
Int. Cl. F01b *19/00*
U.S. Cl. 92—48 14 Claims



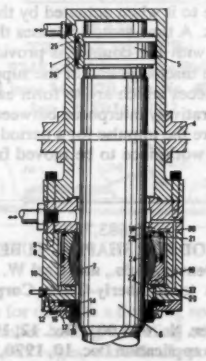
A three position vacuum actuator having a housing including two diaphragms clamped between parts of the housing and a fluid communicating spacer ring located between the outer edges of the diaphragms. Fluid communication passages lead into all three chambers formed by the casing and the two diaphragms. Springs are in each of two operating chambers, one spring biasing the diaphragms apart and another spring biasing one diaphragm toward the other. An operator rod extends through the casing wall and is secured to one diaphragm. Diaphragm backup plates have integral structure which interconnect between diaphragms to make a collapsible link unit with an extremely short travel connecting the two diaphragms so they can move toward and away from each other with the separated condition of the two diaphragms being limited. Annular serrations are made on the backup plates.

3,683,754

HYDRAULIC CYLINDER

Franciscus D. Stuyvenberg, Boxtel, Netherlands, assignor to Hydraudyne N.V., Boxtel, Netherlands

Filed Nov. 9, 1970, Ser. No. 87,897
Claims priority, application Netherlands, Nov. 27, 1969, 6917832
Int. Cl. F16j *15/18*
U.S. Cl. 92—165 4 Claims



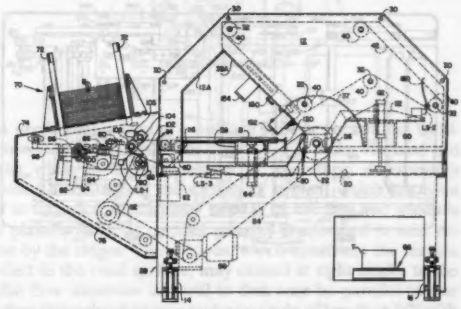
The necessity for a ball joint or other coupling to connect either the cylinder or the piston rod of a piston-cylinder assembly to one member while the other part (piston rod or cylinder) is rigidly fixed to another member to allow for a radial comonent of movement between the two members as the piston-cylinder is operated, is eliminated by allowing this radial component of movement to occur between the piston rod and the cylinder. Thus, both the cylinder and the piston rod may be rigidly fixed to their respective members. This radial movement is accommodated by a spherical bearing support for the piston rod which has radial movement capability within the cylinder. The bearing support is hydraulically balanced to eliminate axially directed binding forces which otherwise would be set up and which would resist movement of the spherical bearing surfaces.

3,683,755

TRAY FORMING APPARATUS

Horst G. Lattke, Middletown, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed July 17, 1970, Ser. No. 55,643
Int. Cl. B31b *1/32*
U.S. Cl. 93—51.1 19 Claims



Individual precut and prescored tray blanks are withdrawn from a stack and fed to an infeed station of the machine, each blank being provided with adhesive while enroute to said infeed station, and each blank being oriented with its end flaps in radially spaced relationship with respect to the axis of rotation of a mandrel which moves upwardly from beneath the blank to engage it at the infeed station and move it upwardly against four fixed corner tab deflecting plows. The inner radial edge of the blank is engaged by a pair of pivotally mounted fingers which fold the inner end flap through 90° as the blank is moved downstream by the mandrel. Projecting portions of these fingers also fold the corner tabs through 90° with respect to the inner end flap, while a pair of resilient leaf spring elements fold the outer end flap at substantially the same time. The outer pair of corner tabs are folded solely by the above mentioned fixed corner tab engaging plows. A pair of opposed side walls have upstream edges for supporting these flap folding elements, and also for supporting fixed side flap folding members so arranged as to engage the side flaps of the blank as it travels between the axially spaced side walls. The continuously moving mandrel then carries the folded tray through substantially 180° of its rotation to set the adhesive prior to arrival at a discharge station, where an eject cylinder carried within the mandrel, punches the tray downwardly so that it drops downwardly onto a take-away conveyor.

3,683,756

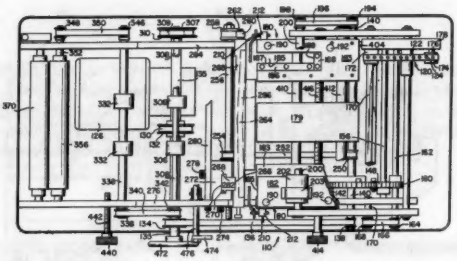
CONTINUOUS FORMS ENVELOPE CONVERTER SYSTEM

Paul O. Wilson, Severna Park, Md., assignor to Baltimore Business Forms, Inc., Baltimore, Md.

Filed Jan. 13, 1971, Ser. No. 106,221
Int. Cl. B31b *1/08, 1/16, 1/62*
U.S. Cl. 93—63 R 14 Claims

A continuous forms press converts a roll of envelope paper into a continuous envelope form having a pair of longitudinal

score lines spaced inwardly from the sides of the strip to provide side margins, a longitudinal row of pinfeed holes in each of the side margins, a plurality of successive integral envelope blank sections, a first transverse line of weakness on each of the envelope blank sections constituting a first fold line between a bottom sheet portion and a top sheet portion, a second transverse line of weakness on each of the envelope blank sections constituting a second fold line between the top sheet portion and a closure flap portion, and adhesive coatings on the closure flap and on the top sheet portion adjacent the side margins. Indicia are imprinted on each of the envelope blank sections signifying the relative position of the pinfeed holes with the leading edge of the envelope blank section. The continuous envelope form is fan folded along the first fold line of each envelope blank section to form a zig-zag folded stack suitable for feeding into a computer print-out device or an automatic typewriter where the envelope blank sections are automatically addressed in succession with addresses contained in a tape or punch card memory. The continuous form is again



fan folded along the first fold line into a zig-zag stack and fed into a continuous forms envelope converter in which the continuous form is separated into separate envelop blanks and simultaneously portions of the side margins are died out, leaving side flaps integral with the bottom sheet portion. The converter folds over the side flaps, folds a top sheet portion of each blank over a bottom sheet portion thereof along the first fold line, activates the adhesive coatings adjacent the side margins of the top sheet portion for securing the side flaps thereto, and folds the closure flap portion over the bottom sheet portions. In order to facilitate proper alignment of a continuous envelope form with the feed pins of the envelope converter, index indicia corresponding to the indicia on the envelope blank section and a fold line index mark are provided on the converter. In addition, blocking means are provided for diverting a leading partial envelope blank section after it is separated from the strip. The converter is adjustable to accommodate continuous forms of different widths to provide envelopes of different lengths.

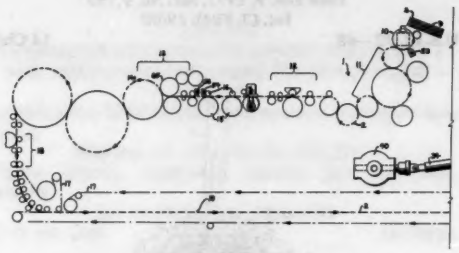
3,683,757

RUNNING FEEDBACK ADJUSTMENT OF ENVELOPE MAKING MACHINES

James W. Lenk, Shawnee Mission, Kans., assignor to Berkley Machine Company, Kansas City, Mo.

Filed May 24, 1971, Ser. No. 146,179
Int. Cl. B31b *1/00*
U.S. Cl. 93—61 AC **13 Claims**

The envelope making machine is provided with a multiplicity of envelope blank proximity devices which read the instantaneous position of respective blanks at important locations along the path of travel. Blank position signals are analyzed and, if a discrepancy with desired position appears, adjusting mechanisms located upstream from the sensing devices are actuated to correct succeeding blanks. Among the adjusting mechanisms disclosed are phase shifting differential transmissions connected between the machine drive train and the respective blank advancing members, and correcting drivers



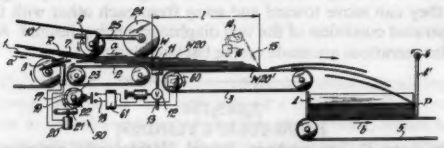
which include expandable and steerable driving tires for correcting blank lateral shift, skew and lead errors.

3,683,758

APPARATUS FOR THE CONTINUOUS FORMATION OF REGULAR STACKS OF FLAT WORKPIECES SUCH AS FLATTENED BAGS OR SACKS

Richard Feldkamper, Lengerich, Westphalia, Germany, assignor to Windmoller & Hofscher, Westphalia, Germany

Filed Jan. 19, 1971, Ser. No. 107,739
Claims priority, application Germany, Jan. 27, 1970, P 20 03 553.4
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **18 Claims**



Apparatus for the continuous formation of regular stacks of flat workpieces such as flattened bags which initially arrive in the form of a row in overlapping formation on a supply conveyor. The apparatus includes a feed conveyor for taking the workpieces to a stacking station which is controlled by a retainer for intermittently and periodically halting workpieces on the conveyor. A counter operates the retainer by transmitting an impulse to it when actuated by the first workpiece to form such stack. A time switch releases the retainer, and a senser associated with the counter is provided to count off, downstream of the discharge end of the supply conveyor, the number of workpieces which are to form each stack. An impulse storer is operatively interposed between the counter and the retainer to store the impulse for a period equal to the time taken by the first workpiece to be moved from the sensor to the retainer.

3,683,759

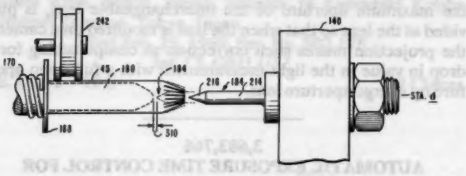
METHOD FOR SHAPING TUBE ENDS

Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 690,001, Dec. 12, 1967, Pat. No. 3,568,577. This application Dec. 10, 1970, Ser. No. 97,047
Int. Cl. B31c *7/02*
U.S. Cl. 93—94 FC **4 Claims**

A method is disclosed for the fabrication of tampon applicator tubes in which the forward ends of thin-walled tube blanks are crimped to provide a plurality of longitudinal fold lines, folded and compressed to form a plurality of pleats, exercised

to weaken the fold lines to facilitate ejection of the tampon and refolded under compression to form a pleated, generally



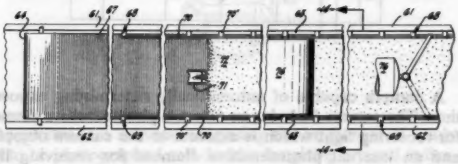
conically shaped forward tube end having a relatively smooth exterior surface.

3,683,760

PROCESS OF INFUSING LIQUID INTO SETTABLE POROUS MATERIAL

Ronald L. Silva, Green Gulch Ranch, Star Ranch, Sausalito, Calif.

Filed Oct. 1, 1969, Ser. No. 862,850
Int. Cl. B28b *1/00*; E01c *7/14*
U.S. Cl. 94—24 **7 Claims**



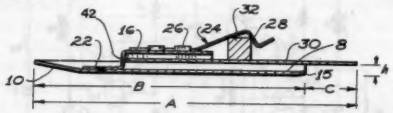
An improved process for effecting setting of porous settable material, such as dry-mix concrete, by infusing liquid into a mass thereof confined in a form. Conduit structure, having one or more primary fluid channels and a plurality of secondary fluid channels by which liquid may be distributed through the porous material to pass therethrough via capillary action, is positioned in contact with the porous mass. The conduit structure in the preferred embodiment comprises corrugated paperboard. The process may be employed in erecting wall sections or laying substantially continuous slabs, such as runways or roadways. The process is utilizable in conjunction with concrete or other settable materials which employ liquid binders in the setting thereof.

3,683,761

TROWEL DEVICE

Anthony T. Babic, 9745 Old Johnnycake Ridge, Mentor, Ohio

Filed June 24, 1970, Ser. No. 49,388
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 A **4 Claims**



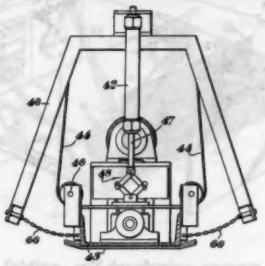
A trowel device for use with a finishing apparatus including a float trowel member having a leading edge and a trailing edge and a pair of side edges, and a finish trowel member having a leading edge and a trailing edge and a pair of side edges mounted on the float trowel member, and the trailing edge of finished trowel member extending outwardly of and overlying the trailing edge of the float trowel member so as to be engageable with a work surface for finishing operations without removal of the float trowel member.

3,683,762

APPARATUS FOR MAKING A RIGID ROAD WHICH HAS A TEXTURED SURFACE

David Payne Maynard, Wexham Springs, Slough, Buckinghamshire, and John Weaver, 15 Woodlands Dr., Beaconsfield, both of England

Filed Aug. 14, 1970, Ser. No. 63,867
Claims priority, application Great Britain, Aug. 15, 1969, 40,840/69
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 R **12 Claims**



A profile beam having a working surface constituted by alternate ridges and grooves is drawn, while being vibrated and whilst while to the application of a uniform downwardly directed force, across the surface of cement which has been laid to form a road, airplane runway or the like and which is still plastic, whereby parallel grooves are formed in said cement by the ridges. The grooves, which constitute the texture applied to the road surface, may extend at right angles to the traffic flow direction and will in that case be parallel to one another throughout or may make an angle of less than 90° with the traffic flow direction

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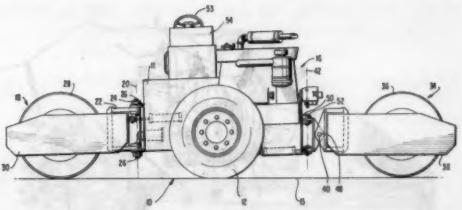
3,683,763

GROUND OR ROAD SURFACE COMPACTING MACHINE

John E. Keppler, and Jesse W. Harris, both of San Antonio, Tex., assignors to Tampo Manufacturing Company, San Antonio, Tex.

Filed July 27, 1970, Ser. No. 58,303
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 R **12 Claims**

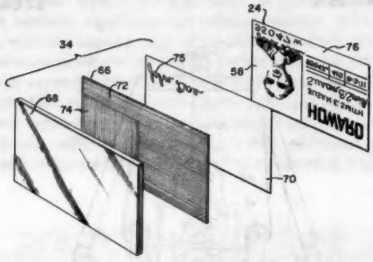


A self-propelled articulated compacting machine including three units connected in tandem. The middle unit is a propulsion unit having power driven roller means for moving the machine over the surface to be compacted. The end units are compactor assemblies of the vibratory roller type and these are pivotally connected to opposite ends of the propulsion unit. As the machine is propelled back and forth over the surface, a steering system controls the angular orientation of the lead compactor unit with reference to the propulsion unit, while the rear compactor unit is allowed to trail freely behind the propulsion unit in either direction of travel of the machine.

3,683,764
CAMERA SYSTEM FOR RECORDING PLURALITY OF IMAGES ON A PHOTOGRAPHIC SHEET

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 864,671, Oct. 8, 1969, abandoned.
Filed June 25, 1970, Ser. No. 49,960
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1 15 Claims

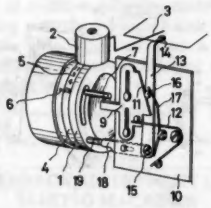


A camera system for photographically recording selected portions of the images from each of a plurality of scenes on mutually exclusive areas of a sheet of photographic material, at least part of such images of the plurality of scenes being directed towards the photographic material in overlapping relationship. An objective lens is associated with each scene and forms an image thereof on the photographic material. Adjacent each objective lens is a polarizer having its transmission axis oriented in a direction different from the orientation of the transmission axes of the other of such polarizing elements. Overlying each such area of the photographic material is a sheet of polarizing material having its transmission axis aligned with that of the one aforementioned polarizing element adapted to first intercept the light rays from the scene to be recorded on that particular area of the photographic sheet.

3,683,765
APPARATUS TO DETERMINE AN AMOUNT OF EXPOSURE

Yukio Iura, Kawasaki-shi, Japan, assignor to Canon Inc., Tokyo, Japan

Filed Jan. 22, 1970, Ser. No. 4,907
Claims priority, application Japan, Jan. 29, 1969, 44/7169
Int. Cl. G03b 7/12, 17/14
U.S. Cl. 95—10 C 7 Claims

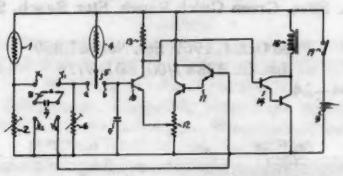


A single lens reflex camera having interchangeable lenses and an apparatus for determining the amount of exposure by measuring the light passing through the fully opened aperture of the lens, in which a diaphragm aperture is preset by setting a preset diaphragm aperture setting ring, having a graduated aperture scale of equal spacing, and the starting point of the movement stroke of the ring is set at a fixed position irrespective of the extent of the maximum aperture of an interchangeable lens, and thus the scale for the maximum aperture of the lens comes to the fixed position, which is characterized by an integral coupling member provided on the above-mentioned preset aperture setting ring or to a preset cam engaged with the ring, and at the same time a correction projection, having such a different length as to correct the apparatus referring to the maximum aperture of the interchangeable lens, is provided at the lens so that when the lens is mounted on a camera, the projection makes such correction as compensating for a drop in value in the light measurement with a full-open aperture by a large aperture lens.

3,683,766
AUTOMATIC EXPOSURE TIME CONTROL FOR CAMERAS

Tsukumo Nobusawa, Tokyo-to, Japan, assignor to Asahi Kogaku kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 16, 1970, Ser. No. 11,405
Claims priority, application Japan, Feb. 24, 1969, 44/13182
Int. Cl. G03b 7/08, 9/62
U.S. Cl. 95—10 CT 11 Claims

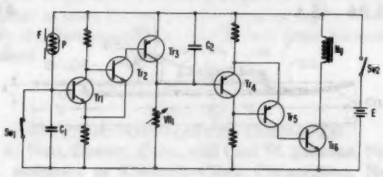


A camera capable of automatically determining exposure time. The camera includes an external photosensitive element for receiving light which is external to the camera objective and an internal photosensitive element for receiving light which has passed through the objective internally thereof. A relatively simple electrical control structure is actuated by the external photosensitive element to determine the exposure time. Simultaneously, a compensating signal is derived from the internal photosensitive element to compensate for inaccuracies inherent in the exposure time determination which would result from the influence of the external photosensitive element along.

3,683,767
ELECTRONIC SHUTTER SYSTEM

Masayoshi Sahara, Sakai City, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka Prefecture, Japan

Filed June 22, 1971, Ser. No. 155,413
Claims priority, application Japan, June 22, 1970, 45/54650
Int. Cl. G03b 9/62
U.S. Cl. 95—10 CT 32 Claims



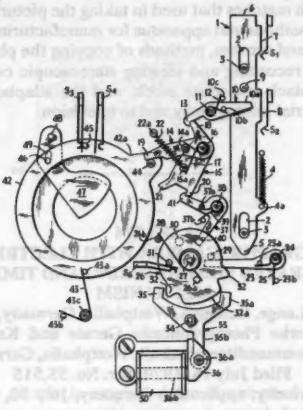
An electronic shutter system is comprised of a photoelectric exposure timer and includes an adjustable timer circuit. The exposure timer triggers the adjustable timer which adds an additional amount of exposure time before shutter closure to compensate for delay in shutter opening do to shutter blade overlap.

3,683,768

FLASH PHOTOGRAPHY CHANGEOVER DEVICE

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Feb. 25, 1969, Ser. No. 802,175
Int. Cl. G01j 1/52
U.S. Cl. 95—10 C 7 Claims



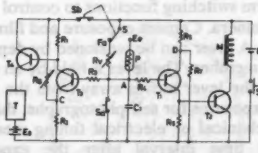
Apparatus in a camera for sensing the brightness of a subject to be photographed and devices for giving a visual indication to the camera operator whether or not a flash unit utilized with the camera is in an operative condition. In addition, apparatus is provided for automatically taking a picture of the subject using the ambient light if there is sufficient ambient light and for energizing the flash unit if there is insufficient ambient light. The apparatus also automatically takes a picture of the subject using ambient light if the flash unit is deflective.

3,683,769

AUTOMATIC FLASH CIRCUIT

Takashi Uchiyama; Tadashi Ito, both of Kanagawa-ken, and Mutsuhide Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 16, 1970, Ser. No. 46,733
Claims priority, application Japan, June 23, 1969, 44/49788
Int. Cl. G03b 15/03, 9/62
U.S. Cl. 95—11.5 R 15 Claims



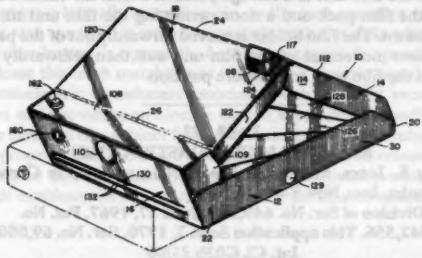
In the automatic camera flash circuit disclosed a start switch actuates a time constant circuit. A first semiconductor circuit, controlled by the time constant circuit, operates an electromagnet. A power source and a second semiconductor circuit actuates a flash device. The flash device is controlled by the time constant circuit through the second semiconductor circuit.

3,683,770

FOLDING CAMERA

Edwin H. Land, and Alfred H. Bellows, both of Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 655,850, July 25, 1967, abandoned.
This application April 24, 1970, Ser. No. 29,753
Int. Cl. G03b 17/52, 17/04
U.S. Cl. 95—13 33 Claims



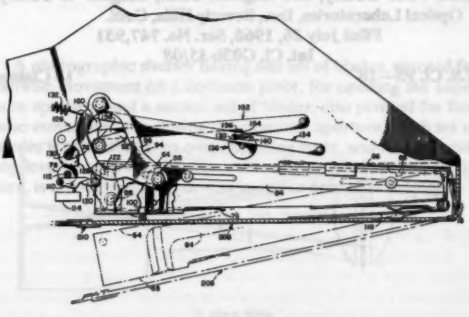
A compact, folding, self-developing camera including a housing having sections pivotally connected to one another for movement between operative and inoperative positions. On the preferred embodiment, a first housing section holds a film unit in position for exposure, a second housing section has an objective lens, and a mirror for reflecting light from the lens to the film unit is included in a third housing section. The components are constructed so that the axis of the lens intersects the plane of the mirror at an acute angle other, and preferably greater, than 45° when the housing sections are operatively positioned; and when the housing sections are inoperatively positioned, the lens axis is disposed generally perpendicular to a plane containing the mirror and adjacent one end of the mirror and the film unit so that the minimum controlling thickness of the camera is the front-to-rear thickness of the lens.

3,683,771

SELF-DEVELOPING CAMERA

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 19, 1970, Ser. No. 65,053
Int. Cl. G03b 17/50
U.S. Cl. 95—13 22 Claims



A self-developing camera for use with a film pack including a plurality of film units arranged in stacked relation in a container. The camera comprises a film holder for holding the pack with the forwardmost film unit located in position for exposure, a pair of driven processing rollers for advancing an exposed film unit from the camera while distributing a

processing liquid within the camera and a film feeder for advancing an exposed film unit from exposure position within the container into the bite of the processing rollers. The camera includes controls for arresting the rotation of the processing rollers with the trailing end of a film unit engaged therebetween so as to retain the trailing end of the extended film unit within the camera and provide the operator with an opportunity to grasp and remove the film completely from the camera. In a preferred embodiment of the camera, the controls also reverse the direction of rotation of the rollers to return the film unit to a storage position within the camera behind the film pack and a door permitting the film unit to be withdrawn. The film holder is moved forwardly out of the path of return movement of the film unit and then rearwardly to return the film pack to exposure position.

3,683,772

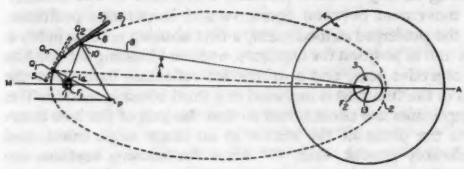
RELIEF CAMERA CONSTRUCTION

Harry S. Jones, Monmouth Beach, N.J., assignor to Chrom-Tronics, Inc., New York, N.Y.

Division of Ser. No. 649,309, June 27, 1967, Pat. No. 3,542,556. This application Sept. 2, 1970, Ser. No. 69,050

Int. Cl. G03b *35/08*

U.S. Cl. 95—18 P **2 Claims**



Camera apparatus for securing three dimensional photographic images wherein equivalent relative displace-ment between the subject to be photographed and the camera to effect deposition of a continuous series of images on a photosensitive film through a multiple-element lens overlay adjacent thereto is optically effected by interposition of displaceable light reflecting means intermediate the camera and subject and a photo-sensitive film construction wherein the photosensitive emulsion is integrally superposed on a multielement lens overlay of selectively variable character.

3,683,773

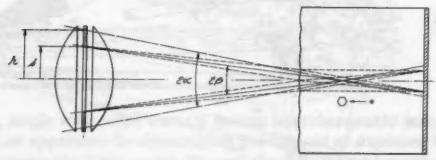
STEREOSCOPIC PHOTOGRAPHY

Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.

Filed July 26, 1968, Ser. No. 747,931

Int. Cl. G03b *35/08*

U.S. Cl. 95—18 **13 Claims**



Stereoscopic photographs, exhibiting the effect of parallax about both horizontal and vertical axes, are recorded on a lenticular film or a lenticular screen-film combination located at the focus of the camera objective, the lenticules on the film or screen having substantially spherical curvature and peripheries with a space-filling configuration, such as square or hexagonal, so oriented that there are no appreciable non-lenticulated areas between adjacent lenticules. Said configuration matches, to a reduced scale, that of an aperture in a plate or diaphragm located in the plane of one of the lens pupils. The characteristics of the lens, the aperture and the lenticles are so coordinated that the elementary image formed at the focus of each lenticule substantially fills the format of that lenticule so that adjacent elementary images are neither appreciable spaced apart nor overlapping. The completed photograph, or a reproduction thereof, exhibits a stereoscopic effect when viewed through the lenticulated surface or through another screen which matches that used in taking the picture. Also disclosed are methods and apparatus for manufacturing such lenticular film and screens, methods of copying the photographs, methods of recording and viewing stereoscopic color photographs on black-and-white stock, and the adaptation of the system to aerial photography and to television.

3,683,774

PHOTOGRAPHIC CAMERA WITH ELECTRICALLY OPERATED FILM METERING AND TIMING MECHANISM

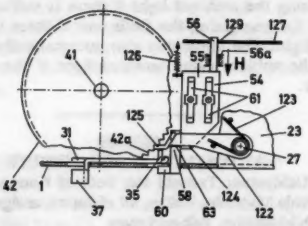
Karl Heinz Lange, Ennigloh, Westphalia, Germany, assignor to Balda Werke Photographische Gerate und Kunststoff R. Gruter Kommanditgesellschaft, Westphalia, Germany

Filed July 16, 1970, Ser. No. 55,515

Claims priority, application Germany, July 30, 1969, P 19 38 622.2

Int. Cl. G03b *1/62, 17/40, 9/62*

U.S. Cl. 95—31 FM **19 Claims**



A photographic camera with a scanner for sensing perforations on a roll of film used for indexing film frames. The scanner has electrical contacts cooperating with a printed circuit board oriented parallel to the motion of the scanner. The contacts perform switching functions to control electrical elements on the camera. Camera exposure and film advance can be interlocked. A lever can be tensioned by depressing an exposure release member. The lever is held by an abutment and released when the lever moves away from the abutment. To take delayed exposures for self-photographs, the lever can be held by a mechanical or electrical timing mechanism for a predetermined time interval after the exposure release member is depressed. The camera parts are preferably made of electrically insulating plastic material through injection molding.

3,683,775

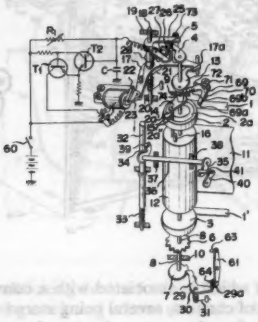
Patent Not Issued For This Number

3,683,776

ELECTRONIC SHUTTER SWITCH MEANS RESPONSIVE TO THE MOVEMENT OF A MIRROR DRIVING MEMBER IN A SINGLE LENS REFLEX CAMERA

Shigeo Ono, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 28, 1968, Ser. No. 771,175
Claims priority, application Japan, Oct. 31, 1967, 42/91655
Int. Cl. G03b *19/12, 9/08*
U.S. Cl. 95—42 3 Claims



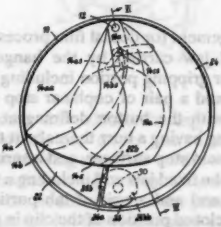
A timing circuit is employed for the shutter in a reflex camera having a retractable mirror. A switch for energizing the timing circuit is disposed in the path of movement of a driving member which actuates the shutter and is engageable with a driving mechanism for raising the mirror to photo-taking position and retracting the mirror into viewing position. When the driving member is positioned to place the mirror in the viewing position, the switch is open. When the driving member begins movement to place the mirror in the photo-taking position, the driving member acts to close the switch. The timing circuit, including an electromagnet, is energized when the switch is closed in response to the release of the shutter to the open position. The timing circuit maintains the electromagnet in energized condition for a predetermined time, after which the shutter is released.

3,683,777

AUTOMATIC FOCUS CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

Fumihiro Miyagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,417
Claims priority, application Japan, Oct. 13, 1969, 44/82079
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R 10 Claims



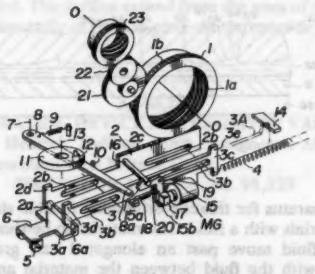
An automatic focus control device for including a distance setting ring for focusing a taking lens, and an adjusting ring for a light receiving lens, a shutter operating button and a shutter release member includes a rack member engaged with external gear teeth on the setting ring and mounted for longitudinal reciprocation. A drive slide is mounted parallel to the rack member for longitudinal reciprocation, and a spring biases the slide toward a shutter release member. A disk movable in accordance with advance of the film operates a lever to conjointly displace both the rack member and the slide against the bias of the spring and a position where the rack member and the slide are releasably latched by locking means which is released by the shutter operating button. A catch on the slide engages a laterally extending pin on the rack member so that the rack member is moved conjointly with the slide when the shutter button is operated. An electromagnet is operable to release this latch member and receives an electric signal from photoelectric transducers associated with the light receiving lens and providing an electric output signal corresponding to the distance of a subject from the camera. When the subject is in proper focus, the electromagnet is energized to release the latch so that the rack member remains stationary while the slide continues its movement to operate the shutter release.

3,683,778

PHOTOGRAPHIC SHUTTER

Hugo Weiss, Atterseestrasse 6, 8 Munich 60, Germany

Filed May 13, 1970, Ser. No. 36,897
Claims priority, application Germany, May 28, 1969, P 19 27 158.0
Int. Cl. G03b *9/20*
U.S. Cl. 95—60 7 Claims



A photographic shutter having one set of blades, pivoted for fanwise movement on a common pivot, for opening the exposure aperture, and a second set of blades, also pivoted for fanwise movement, for closing the exposure aperture. Each set of blades is operated by its own operating lever, and both operating levers are driven by the same driving element which, in turn, is driven by a main driving member or master member.

3,683,779

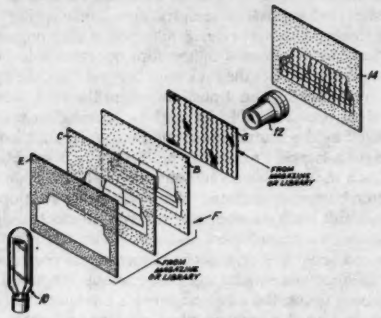
METHOD AND APPARATUS OF DECOR SIMULATION

Ronald W. Lifton, 345 E. 73rd St., New York, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,112
Int. Cl. G03b *15/00*
U.S. Cl. 95—85 18 Claims

Methods and apparatus for decor simulation, such as simulating the appearance of custom upholstered furniture, custom

window treatments, decorative furnishings, and the like, and methods and apparatus for producing projection transparencies having the detail spectrum thereof photographically modulated for enhanced usage in such decor simulation.

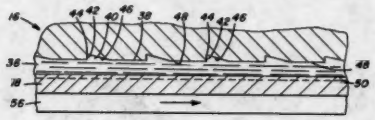


3,683,780

TREATING APPARATUS

Robert I. Edelman, and Evan A. Edwards, both of 1669 Lake Ave., Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,066
Int. Cl. G03d 3/08
U.S. Cl. 95—94 R 3 Claims



An apparatus for treating or coating flexible sheet or film-like materials with a fluid. The material to be treated and the treating fluid move past an elongated and grooved plate member with the fluid between the material and the plate member. The grooves are closely spaced and extend in a direction normal to the path of the fluid.

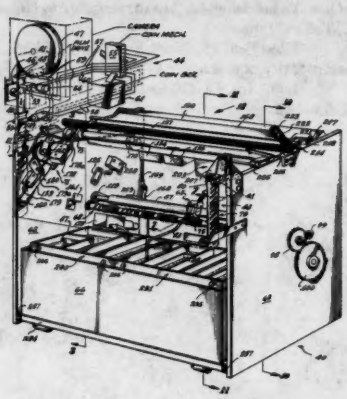
3,683,781

AUTOMATIC PROCESSOR

Wilbus G. Allen, 1807 Kelly St., Oceanside, Calif.

Filed Feb. 26, 1969, Ser. No. 802,490
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R 52 Claims

A photographic apparatus for automatic photography, combined with an automatic processor for receiving an exposed film strip from the photographic apparatus and processing the strip step by step through a series of treating tanks for delivery to a customer. The strip is received in a carrier slidable along a horizontal track by two lead screws extending along the track and alternately engaged with the carrier as an incident to rotation thereof between film-raised and film-lowered positions at the ends of each tank by an oscillating operator. One screw has sections of differing pitch for feeding the carrier at differing rates for differing treating intervals constituting multiples of the cycle of the operator, and the other has sections for traversing the carrier between tanks. Transfer devices at the ends of the track shift carriers between the track and an overlying return bar which is associated with a conveyor for full loop movement of carriers, several being stored on the return bar. An alternate form has a second processing track.

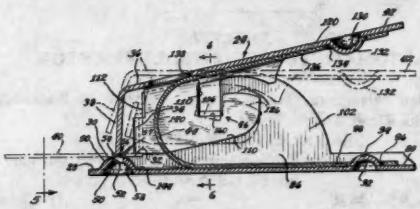


3,683,782

CLIP ARRANGEMENT FOR DENTAL FILM PROCESSING HANGERS

Irwin C. Rinn, Sleepy Hollow, and Charles F. Stevenson, Elgin, both of Ill., assignors to Rinn Corporation

Filed July 26, 1971, Ser. No. 165,930
Int. Cl. G03d 3/00
U.S. Cl. 95—100 7 Claims



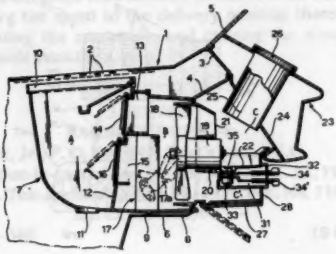
A clip arrangement for dental film processing hangers comprising a fixed jaw carried by the hanger and defining a generally planar gripping portion including a spherically contoured button and a pair of coplanar stop surfaces on either side of same, with the button defining at its mid portion a rounded opening having a burr thereabout that is substantially in the plane of said stop surfaces, and a spring biased movable jaw pivoted to the fixed jaw and including a tang formed with a blunt gripping end and a pair of tab portions on either side thereof. In the closed position of the clip in gripping a film, the movable jaw tabs grip the film at the respective stop surfaces, and the tang is centered on the opening but is stopped from movement into same to bias the film into engagement with the burr without dimpling it, whereby a secure three point holding action is applied to the film.

3,683,783

AIR CONDITIONING DEVICE FOR MOTOR VEHICLES

Giulio Pedrani, via Gouzia 59, Turin, Italy

Filed March 17, 1971, Ser. No. 125,039
Claims priority, application Italy, March 26, 1970, 53095 B/70
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.07 3 Claims



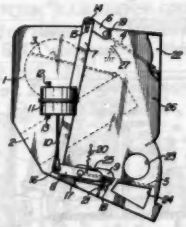
An air conditioning device for installation in a vehicle has a moulded casing enclosing a front air intake chamber, an intermediate mixing chamber housing a hot water heater through which a regulatable part of the intake air flows and rear air distribution chamber which distributes conditioned air between upper outlet ducts and a lower, regulated, outlet. Respective control levers controlling flow of hot water through the heater and the flow of air there through are housed in a box located in but effectively sealed from the air distribution chamber.

3,683,784

AIR CONDITIONER FOR VEHICLES

Toshiji Matsui; Yasuhiko Amano; Yoshitsugu Hotta, and Tsutomu Mitabe, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotacho, Toyota-shi, Japan

Filed Oct. 13, 1970, Ser. No. 80,278
Claims priority, application Japan, May 16, 1970, 45/47411
Int. Cl. B60h *1/02*
U.S. Cl. 98—2.08 4 Claims



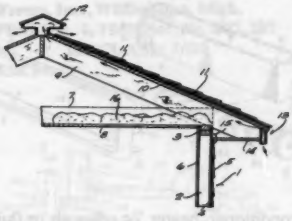
An air conditioner for vehicles having a single vacuum diaphragm with which the driver can open and close a defroster outlet for blowing warm air on the windshield of the vehicle, a central outlet through which to blow suitably heated air or cold air into the middle space of the passenger compartment, or a heater outlet for blowing heated air into the lower space of the same compartment, because the vacuum diaphragm makes it possible to set the dampers for the three outlets simultaneously in three different positions and ensure unabated stability in positioning even when the diaphragm is in the neutral position.

3,683,785

ROOF CONSTRUCTION PROVIDING AIR FLOW FROM EAVE TO RIDGE

Howard L. Grange, Darlington, Wis.

Continuation-in-part of Ser. No. 745,298, July 16, 1968, abandoned. This application June 11, 1970, Ser. No. 45,278
Int. Cl. E04b *7/18*; E04d *13/06, 13/16*
U.S. Cl. 98—35 20 Claims



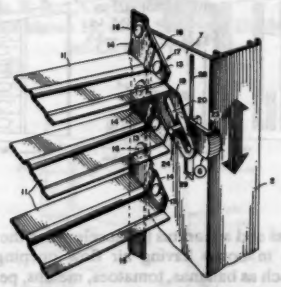
A roof construction designed to provide air flow along the underside of the roof deck from the facia to the ridge to thereby prevent the formation of ice dams on the roof in the winter as well as removing accumulated attic heat for summer comfort. The facia is attached to the ends of the rafters and is a dual-wall member including a front facia board and a backing member which are spaced apart to provide a series of vertically extending passages therebetween. The upper end of the backing member terminates short of the upper end of the facia board so that air flowing upwardly within the passages is directed along the underside of the roof deck and flows upwardly along the roof deck to an outlet at the ridge of the roof. Baffles are located within the spaces between adjacent rafters to insure that air flow along the underside of the roof deck is unobstructed. The baffles extend from the area of the facia to a location inwardly of the top plate on the exterior wall of the building.

3,683,786

OPERATING DEVICE FOR REGISTER VALVE

Warren R. Hedrick, Holland, Mich., assignor to Allied Thermal Corporation, New Britain, Conn.

Filed Nov. 19, 1970, Ser. No. 91,129
Int. Cl. F24f *13/06*
U.S. Cl. 98—110 3 Claims

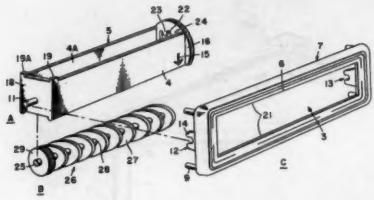


A register valve comprising a plurality of pivotally mounted directional vanes within a frame has a novel operating device for opening and closing such vanes. The operating device includes a slide member mounted for sliding movement on a suitable support in the frame, and is frictionally held in adjusted position. A pin and slot connection between the member and a bracket on one of the vanes rotates the vanes when the slide member slides along its support.

3,683,787
AIR FLOW SYSTEM WITH FULL CONTROL ELLIPTICAL VANE LOUVERS

Arthur P. Cary, P.O. Drawer AC, Hutchins, Tex.

Filed Dec. 7, 1970, Ser. No. 95,586
Int. Cl. F24f 7/00
U.S. Cl. 98—40 V 9 Claims

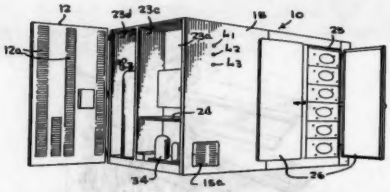


An air conditioner, heater, or other air or fluid flow system having a louver unit for controlling the direction and volume of fluid flow therethrough from direct full forward flow to completely mechanically shut off condition. In air flow systems that have only one louver unit there is little or no advantage to mechanically shut off the air flow, since this can be accomplished more economically by the power shut off switch. However, in automotive and other air conditioning or heater units that employ two or more louver units there is a definite advantage to a mechanical shut off employed in combination with an elliptical vane structure that provides a full and incremental control of vane and consequently airflow direction.

3,683,788
APPARATUS FOR RIPENING FRUIT AND THE LIKE

Gerald F. McDonnell, Birmingham, Ala., and Hugh T. Freebairn, Houston, Tex., assignors to Banana Control, Inc., New Orleans, La.

Division of Ser. No. 767,426, Oct. 14, 1968, Pat. No. 3,620,765, which is a continuation-in-part of Ser. No. 523,327, Jan. 27, 1966, abandoned. This application July 1, 1970, Ser. No. 60,206
Int. Cl. B65g 1/00
U.S. Cl. 99—239 5 Claims

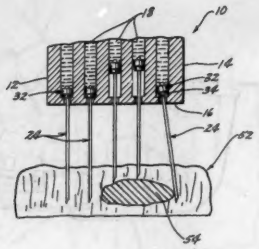


A process and apparatus for accelerating the ripening of unripe fruits in boxes having air flow openings in the walls thereof, such as bananas, tomatoes, melons, pears, avocadoes, and the like, wherein the fruit is subjected to a timed initiating stage at temperatures of 68° to 95° F. in the presence of ethylene gas, and may then be subjected to subsequent stages of maturing, and of terminal temperature conditioning at selected temperatures, and times to achieve improved uniformity of ripening and prolonged shelf life. The apparatus includes timers, temperature sensors and heating and cooling means interconnected to automatically cycle the fruit through the ripening program.

3,683,789
MEANS FOR INJECTING FLUID INTO MEAT PRODUCTS AND THE LIKE

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed July 20, 1970, Ser. No. 56,318
Int. Cl. A23b 1/16
U.S. Cl. 99—256 4 Claims

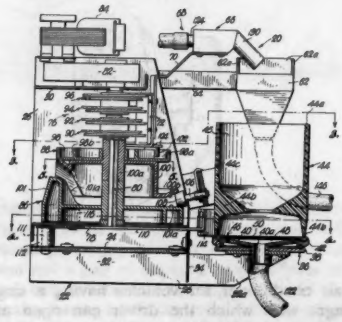


A means for injecting fluid into meat products and the like comprising a fluid manifold which is reciprocatably mounted adjacent a product support means. The fluid manifold is connected to a source of fluid under pressure and has a plurality of spaced apart bores formed therein. An injector needle is slidably mounted in each of the bores for piercing the meat product and to inject fluid therein as the manifold is moved towards the meat product. The relationship of the needles and the bores is such that the needle can slidably move inwardly into the bore and/or deflect in a lateral direction upon engaging a bone in the meat. Means is also provided on the needle for preventing the crystallization of salts on the inner end thereof. Further means is provided to prevent the bore of the needle from becoming clogged.

3,683,790
RECIRCULATION COFFEE BREWER

Stewart L. Black, Lee's Summit, Mo.; Spencer L. Childers, Fresno, Calif., and Leonard Bieri, Jr., Lee's Summit, Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed April 16, 1971, Ser. No. 134,799
Int. Cl. A47j 31/00
U.S. Cl. 99—289 10 Claims



Coffee or tea brewing and dispensing apparatus wherein hot water and fresh beverage grounds are delivered into an open top receptacle and the brewed beverage drawn from the bottom thereof through a filter comprising wet coffee grounds supported on a foraminous screen by a suction pump in a recirculation and delivery line coupled to the bottom of the receptacle. A discharge spout connected to the line

downstream of the pump is mounted for shifting movement from a position for returning brewed beverage back into the receptacle to an alternate position for delivering the beverage to a dispensing station. The receptacle is selectively movable away from the screen through a displacement to permit removal of grounds therefrom by a scraper blade shiftable across the upper face of the screen. A series of cams and associated followers driven by a single motor sequentially operate the components of the apparatus by controlling introduction of water and fresh grounds into the receptacle, effecting predetermined recirculation of the brewed beverage, then diverting the spout to the delivery position thereof and finally elevating the receptacle and causing the scraper to remove grounds from the screen.

3,683,791

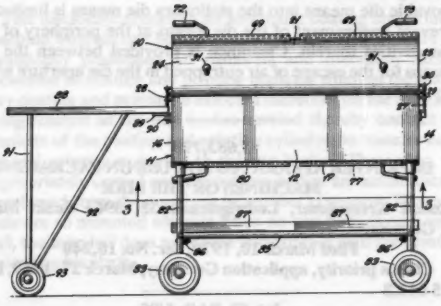
BARBECUE GRILL

Henry J. Rast, Jr., P. O. Box 444, John's Island, S.C.

Continuation-in-part of Ser. No. 857,487, Sept. 12, 1969, abandoned. This application Feb. 17, 1971, Ser. No. 116,003

Int. Cl. A47j *37/07*

U.S. Cl. 99—340 **19 Claims**



Apparatus for direct or indirect grilling and/or smoking of meats, fowl, fish using fuel such as charcoal comprising a ventilated housing which can be divided by a removable wall into two separate cooking zones, each of which contains a grill assembly including spaced vertical fireboxes and horizontal grills.

3,683,792

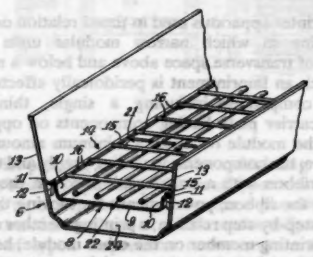
ELECTRIC BARBEQUE UNIT

Richard N. Groves, Jr.; Robert L. Cain, and Robert F. Senn, all of Lafayette, Ind., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Nov. 2, 1970, Ser. No. 86,189

Int. Cl. A47j *37/07*

U.S. Cl. 99—447 **7 Claims**



An electric barbeque unit having an open-topped housing within which an imperforate open topped pan base is supported above which a grill to support food to be cooked is disposed, and with their being electrical heating element means arranged above the bottom of the pan base and below the grill with the electrical heating unit being substantially embedded in rocks supported in the base pan.

3,683,793

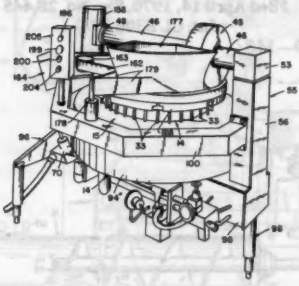
APPARATUS FOR BLENDING AND PORTIONING MEAT AND OTHER PRODUCTS

Donald W. Garnett, Grand Ledge, Mich., assignor to Mahogany Farms, Inc., Williamston, Mich.

Filed Aug. 4, 1969, Ser. No. 847,297

Int. Cl. A22c *7/00*

U.S. Cl. 99—450.1 **12 Claims**



In respect to the method, slices of the product to be processed, illustratively but not limited to slices cut from a pre-frozen block of random-distributed meat cuts, are gravitationally assembled in lamina-wise in a succession of rotatively traveling pockets, in which they are shaped and compressed as a stack. When a charge or portion represented by such a stack reaches a predetermined height it acts as a cam to trigger a pneumatically powered ejector in its pocket. The charge is ejected in a compacted and knife-trimmed form, having been volumetrically weighed quite accurately.

3,683,794

Patent Not Issued For This Number

3,683,795

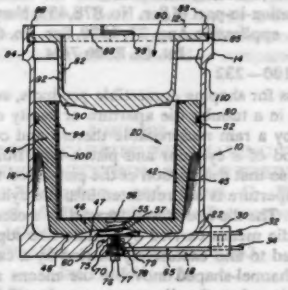
WASTE COMPRESSOR

Lynn C. Harris, R. R. 1, Curlew, Iowa

Filed March 10, 1971, Ser. No. 122,886

Int. Cl. B30b *1/32*

U.S. Cl. 100—53 **13 Claims**



This application relates to a waste compressor particularly adapted for household or domestic usage which is powered by

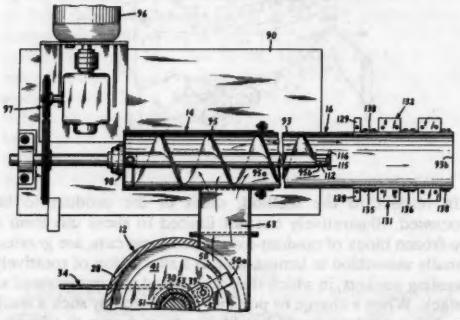
water pressure from a conventional water supply. The compressor incorporates a basket type frame in which a waste material carrying basket is slidably mounted, the basket forming the movable element for the compression motor and defining with the base of the casing, the expansion chamber for the compressor. A stationary die element removably connected to the top of the casing forms the cover such that as the basket is moved toward the die element waste material therebetween and in the basket is compressed.

3,683,796

APPARATUS HAVING AN AUGER-COMPACTER FOR REDUCING THE VOLUME OF WASTE MATERIALS

William Wiley Miner, Hightstown; Henry Gardner Scholer, Carteret, and Stephen Richard Collins, South Amboy, all of N.J., assignors to Mil-Pac Systems, Inc., Mountainside, N.J., by said Scholer and Collins

Filed April 14, 1970, Ser. No. 28,445
Int. Cl. B30b 3/00
U.S. Cl. 100—145 **6 Claims**



Apparatus for reducing in volume waste material or garbage comprising a pulverizer or hammermill receiving wet and dry organic and inorganic material, comminuting this waste material and delivering it in particle form to an auger-compacter. An air flow is likewise developed by the pulverizer and the apparatus recycles air to the pulverizer to assist in positively delivering waste material to the pulverizer. The auger-compacter has a helical screw that compacts the comminuted waste material or garbage in a compaction zone and delivers the compacted garbage reduced in volume as an output of the apparatus.

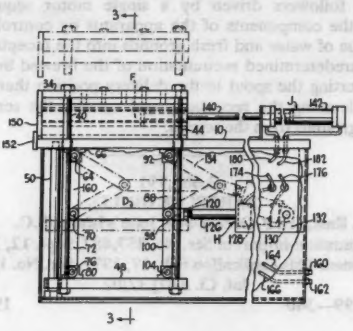
3,683,797

FOOD PRESS

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Continuation-in-part of Ser. No. 878,439, Nov. 28, 1969. This application Aug. 27, 1970, Ser. No. 67,482
Int. Cl. B30b 7/04
U.S. Cl. 100—232 **6 Claims**

A press for shaping comestible products, such as meat and the like, in a tubular die aperture or cavity of uniform cross section by a ram reciprocable therein and connected to the piston rod of a cylinder and piston-type fluid actuator constructed so that the portion of the piston rod that extends into the die aperture is not retracted into the cylinder of the fluid actuator. The die aperture is formed by a channel-shaped stationary die means carried by a plate-like support detachably connected to and exclusively carried by a cabinet-type base, and a channel-shaped movable die means at least partially receivable, when the die means are closed, in the stationary die means, each die means being preferably shaped or oriented to maximize opposed forming or pressing areas. The movable die means is guided by the support for the stationary die means and is moved by a toggle link mechanism and a cylinder and piston-type fluid actuator located below the support for the stationary die means. A supplementary guide means is provided below the support for the stationary die means to assist the support for the stationary die means in



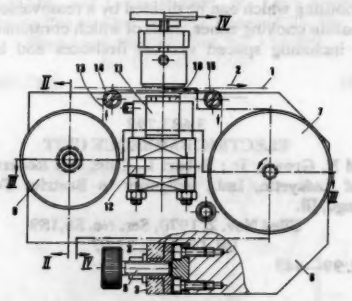
guiding the movable die means. Travel or movement of the movable die means into the stationary die means is limited to prevent engagement of the die means at the periphery of the die cavities therein. Clearance is provided between the die means for the escape of air entrapped in the die aperture when a product is compressed therein.

3,683,798

IMPRINTER APPARATUS FOR USE ON PACKAGING MACHINES OR THE LIKE

Rudolf Kreuschmer, Ludwigstrasse 35, 8963 Sankt Mang, Germany

Filed March 10, 1970, Ser. No. 18,240
Claims priority, application Germany, March 27, 1969, P 19 15 612.8
Int. Cl. B44b 5/00
U.S. Cl. 101—27 **7 Claims**

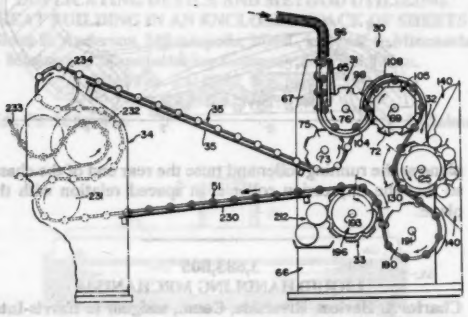


An imprinter apparatus used in timed relation on a packaging machine in which narrow modular units occupy a minimum of transverse space above and below a moving web upon which an imprintment is peridoically effected; a lower modular component including a single, thin vertically disposed carrier plate having components on opposite sides whereby the module occupies a minimum amount of transverse space; the components including supply and take-up reel having a ribbon with a transferable medium thereon; guide means for the ribbon; power means for moving the reels and ribbon in step-by-step relation; a printing member cooperating with the printing member on the other module; heater means for one of the printing members; and power means for operating the printing members; the power means for the respective components being fluid-pressure operated.

3,683,799
HIGH SPEED CAN PRINTING MACHINE

Wesley J. Szpitalak, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 22, 1965, Ser. No. 501,372
Int. Cl. B41f 17/20
U.S. Cl. 101—40 26 Claims

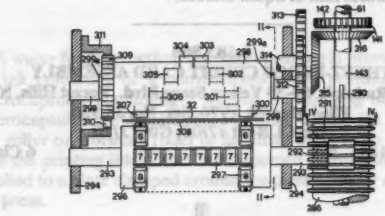


This disclosure relates to an automatic coating and printing machine wherein can bodies and like tubular members are automatically positioned on mandrels and thereafter serially presented to coating and printing blankets wherein the necessary coating and printing is effected thereon with the mandrels being rotated as the can bodies carried thereby contact the blankets of the coating and printing cylinders to transfer coating and printing materials to the can bodies. Thereafter, the appropriately coated and printed can bodies are automatically transferred from the mandrels to another conveyor. The mandrels are so mounted wherein when no can body is on a mandrel, the mandrel does not come into contact with the printing or coating blankets.

3,683,800
SERIAL PRINTING MECHANISM

Ilario Bovio, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed June 18, 1970, Ser. No. 47,337
Claims priority, application Italy, June 27, 1969, 52405 A/69
Int. Cl. B41j 9/10, 1/22
U.S. Cl. 101—93 C 4 Claims

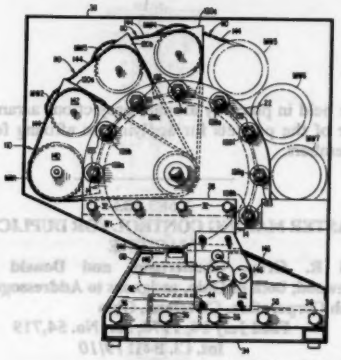


In a serial printing mechanism for calculating machines, a type drum bearing a plurality of rows of types rotates for selection of the types whereas a cylinder has a plurality of projections disposed in the form of a helix and axially aligned with the rows of types. Impression means moves the cylinder towards the drum to cause one of the projections to strike against the selected type and to rotate the cylinder step by step to bring the projector sequentially into the striking position.

3,683,801
DRUM SERIES PRINTER WITH TYPE WHEELS DRIVEN BY INDIVIDUALLY REMOVEABLE MOTORS

Edgar Whitehouse Barrett, Chateauguay, Quebec, Canada, assignor to Robert Morse Corporation Limited, Montreal, Quebec, Canada

Filed May 28, 1970, Ser. No. 41,307
Int. Cl. B41j 1/46, 7/36
U.S. Cl. 101—99 8 Claims



The printing machine of this invention comprises a plurality of motor driven printing wheels which are selectively positioned to print out a desired line of information on a record medium. Each printing wheel is of multi-part construction having a shaft receiving hub, a rim plate fixed on the hub, and a plurality of type sectors removably, pivotally mounted on the rim plate. A platen disposed horizontally below the printing wheels is vertically displaced to print the characters on those sectors that are facing vertically downwardly at the platen printing position. Each of the sectors is free to swing under the influence of its own weight about a pivot axis extending parallel to the print wheel rotational axis as the print wheel is rotated so that when the sector is moved to its downwardly facing printing position, the weight of the sector, under the influence of gravity, will swing the sector to a position where the type on the sector is parallel to the printing surface of the platen. The sectors on each printing wheel are readily removable so that they may be replaced or arranged in a different order on the printing wheel. The print wheel hub is formed separately of the print wheel rim plate and is preferably fabricated from a relatively hard metal to minimize wear due to print wheel rotation. The hub is formed on its outer periphery with an annular, radially extending land which serves as a spacer for axially spacing the rim plate from a sprocket wheel which is drive connected by a chain to the print wheel drive motor. The rim plate is formed from a lighter and more readily fabricatable material as compared with the hub.

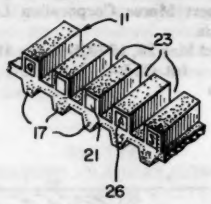
3,683,802
ENDLESS TYPE CARRIER BELT HAVING TYPE-RECEIVING POCKETS IN AN EDGE THEREOF

Neal Hepner, Birmingham, and Albert C. Williamson, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 4, 1970, Ser. No. 8,563
Int. Cl. B41j 1/26
U.S. Cl. 101—111 4 Claims

An endless character belt for an on-the-fly printer having drive teeth arranged on the inner circumference thereof and

pockets located in an edge of the belt for receiving type members perpendicular to the plane of the belt. The type members

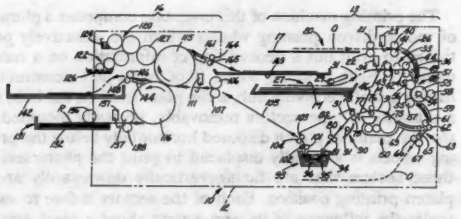


may be held in place by arcuate projections arranged on the interior of the pockets for applying an affixing force to the type members.

3,683,803
MASTER MAKING CONTROL FOR DUPLICATING MACHINE

Donald R. Gray, Chesterland, and Donald J. Miller, Lakewood, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 14, 1970, Ser. No. 54,719
Int. Cl. B41l *19/10*
U.S. Cl. 101—132 **5 Claims**



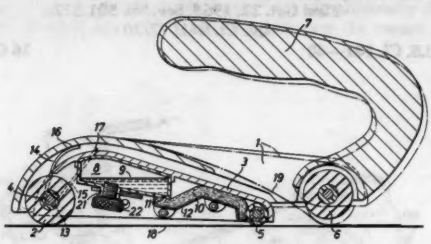
An apparatus and method for producing multiple copies of original documents. The apparatus converts electrostatically imaged photoconductive sheets into lithographic masters from which copies are printed under the control of a preset counter. The counter is arranged to delay the processing of a master, by preventing feeding of it into a processing path, until the printing time remaining for a previous master approximates the time required to transport the delayed master through the processing path to avoid impairment of its lithographic and handling qualities.

3,683,804
SPIRIT TRANSFER MEANS IN HAND OPERATED ADDRESS PRINTING MACHINES

Albert A. J. Hunter, "Tarrystone," Hamshades Lane, Whitstable, England

Filed April 3, 1970, Ser. No. 25,381
Int. Cl. B41l *11/00*
U.S. Cl. 101—133 **6 Claims**

This invention relates to a hand operable addressing machine of the spirit transfer type comprising a chassis having a handle at the rear end, and hinged at the forward end on the axis of a running roller, said chassis carrying an impression roller beneath the handle, a housing supporting a reservoir for the spirit, a wetting roll at the rear end of the housing and a wick between the reservoir and the wetting roll, said housing being also hinged at the forward end on the axis of the running roller and supported at the rear end by the wetting roller, and coil springs about the axis of the running roller operating to depress the housing so that the wetting roller runs in the same

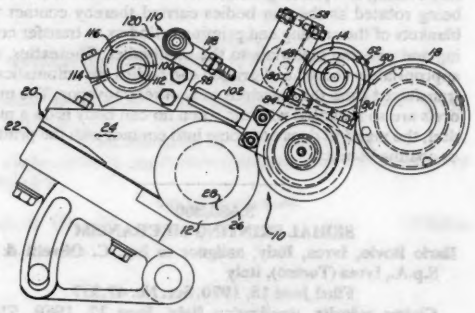


plane as the running roller and raise the rear end of the chassis so that the impression roller is in spaced relation with that plane.

3,683,805
LIQUID HANDLING MECHANISM

Charles A. Harless, Riverside, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 23, 1970, Ser. No. 57,566
Int. Cl. B41f *31/14*
U.S. Cl. 101—350 **4 Claims**

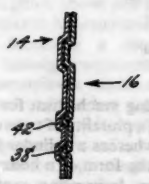


An improved liquid handling mechanism in which a pick-up roll is actuated by eccentrics on the shaft ends to move toward and away from a liquid carrying roll to pick up liquid therefrom with the pick-up roll being maintained in a constant pressure relationship with a liquid receiving roll and transferring a uniform film of liquid thereto.

3,683,806
THEFT-PROOF CREDIT CARD ASSEMBLY

Murray Rudolph, 69-39 Yellow Stone Blvd., Forest Hills, N.Y.

Filed May 20, 1970, Ser. No. 38,938
Int. Cl. B41l *47/02*; G09f *3/10*
U.S. Cl. 101—369 **6 Claims**



A theft-proof credit card assembly including separate front and back laminates. The laminates are temporarily held in re-

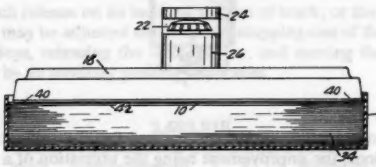
gistry while a coded symbol is simultaneously embossed on both. The front laminate is sent to a customer while the back laminate is mailed several days later. Upon receiving both laminates, they are permanently secured to form a useable credit card assembly.

3,683,807

DUPLICATING DEVICE AND METHOD UTILIZING HEAT BUILDING IN AN ENCLOSED STACK OF SHEETS

Glenn R. Anderson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 24, 1970, Ser. No. 13,359
Int. Cl. B41l *11/02, 11/06*
U.S. Cl. 101—426 2 Claims



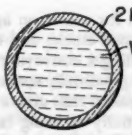
A flat hand-operated heating platen, to which is temporarily attached to an image master, produces a number of identical copies by a rhythmic "rubber stamp" dry duplicating process wherein partial depletion of reactants in the master image is compensated for by automatic increase in heat in the stack of receptor sheets.

3,683,808

WATER FEEDING METHOD FOR OFFSET PRINTING

Taro Kimura, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 16, 1971, Ser. No. 124,824
Claims priority, application Japan, March 20, 1970, 45/24305
Int. Cl. B41l *25/14*; B41f *7/24*
U.S. Cl. 101—451 1 Claim



A water feeding method for offset printing is provided using an ink consisting of a conventional offset printing ink and microcapsules containing a wetting or damping liquid. The microcapsules are decapsulated crushed on the ink distributing roller or vibrating roller of an offset press to be dispersed into the printing ink so that the dispersed printing ink may be applied to a plate clamped around the plate cylinder of the offset press.

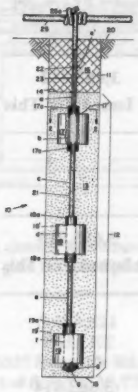
3,683,809

DETONATOR FUSE INITIATED AQUEOUS SLURRY EXPLOSIVE SYSTEM

William C. Burkle, Sharpley, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 30, 1970, Ser. No. 51,053
Int. Cl. F42d *1/04*
U.S. Cl. 102—22 14 Claims

A detonator cord-initiated slurry type inorganic oxidizer salt explosive system is provided, in which the slurry explosive charge is detonatable without substantial loss in detonation energy encountered heretofore, and which comprises a detonator cord having alternate high and low energy loadings extending in lengthwise contact with a mass of the explosive; a booster type detonator for the explosive within the mass and adjacent each high energy core section and detonatable by detonation energy transmitted from the adjacent high energy section; each high energy section being detonatable by detonation energy transmitted from an adjacent low energy core section which has a loading not exceeding about 18 grains PETN (or equivalent) per foot, and thereby laterally transmits insufficient detonation energy to the main charge to cause substantial lowering of the detonation energy thereof. The high energy section loading is at least 25 grains PETN (or equivalent) per foot. In one embodiment, the high energy section loading can be at least 200 grains PETN (or equivalent) per foot to constitute an integral unit of high energy section and adjacent booster without need for a separately disposed booster.



3,683,810

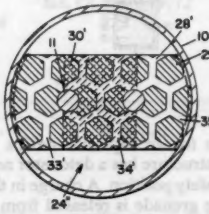
Patent Not Issued For This Number

3,683,811

ELECTRIC INITIATORS FOR HIGH ENERGY FIRING CURRENTS

Hiram E. Driscoll, Hurley, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 22, 1970, Ser. No. 48,248
Int. Cl. F42b *3/18*
U.S. Cl. 102—28 R 27 Claims



Electric delay type initiators for firing under high energy firing current conditions, containing a combination of shunt means and ignition composition, providing for diversion of excess firing current from the ignition area, and hence for protection of the assembly against failure caused by arcing across

the lead wire terminals and bursting of the cap shell. The shunt is an electrically conductive material, electrically connecting with the lead wires, outside the ignition area, and has a sufficiently high resistance to permit flow of normal (no-arc) firing current through the firing circuit; but, in response to flow of an arc-forming firing current, it provides a path of sufficiently reduced resistance across the lead wires during the circuit reform period to divert flow of the firing current across the lead wires and hence from the ignition area for flow from the system.

3,683,812

Patent Not Issued For This Number

3,683,813

Patent Not Issued For This Number

3,683,814

PYROTECHNICAL FUSE WITH A DETONATOR DISPLACEABLE FROM A SAFE POSITION INTO A LIVE POSITION

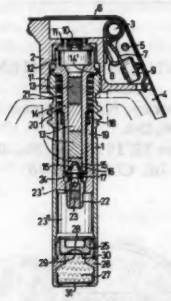
Hans Bedall, Nurnberg; Max Rentzsch, Furth, and Dieter Buckley, Nurnberg, all of Germany, assignors to Diehl, Nurnberg, Germany

Filed Nov. 19, 1970, Ser. No. 91,098

Claims priority, application Germany, June 26, 1967, P 15 78 446.0; March 7, 1970, P 20 10 880.9; March 7, 1970, P 20 10 881.0

Int. Cl. F42b *27/02*; F42c *15/02*

U.S. Cl. 102—64 13 Claims



A fuse structure for an explosive device such as a hand grenade. The fuse structure has a detonator normally disposed in a noneffective safety position. A charge in the fuse structure is ignited when the grenade is released from the hand and is operable to release the detonator to effective position. The detonator carries a charge which is ignited only after the detonator has been released from ineffective position. The detonator charge will be operable for igniting a further charge which will detonate the explosive device only when the detonator is in effective position.

3,683,815

FRANGIBLE GLASS GRENADE

Roy E. Shaffer, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1970, Ser. No. 86,443

Int. Cl. F42b *27/06*

U.S. Cl. 102—65 8 Claims

An improved munition and method for controlling riotous conditions; the improvement being the utilization of a frangible container for the munition.

3,683,816

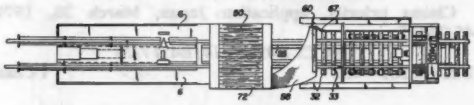
CURVING CHUTE APPARATUS AND METHOD FOR POSITIONING RAILROAD TIES

Lorne D. Berg, and John E. Rymes, both of Calgary, Alberta, Canada, assignors to Mannix Co., Ltd., Calgary, Alberta, Canada

Filed Aug. 10, 1970, Ser. No. 62,345

Int. Cl. E01b *29/05*

U.S. Cl. 104—6 6 Claims



A tie delivery system for use in an apparatus for continuously constructing railroad tracks and the like comprising a support structure including a conveying path, means for conveying a plurality of longitudinally spaced ties along said path and a pair of laterally spaced rails above said ties, power actuated means for sequentially securing fastening means to the ties and rails and means for delivering as assembled track section from said path, the combination which includes a tie storage area mounted on said support structure at an elevation higher than the conveying means and arranged to hold ties in a position parallel to the rails, a downwardly inclined curving chute arranged to receive a tie from said tie storage area in a position substantially parallel to the rails and deliver the tie beneath the rails on the conveyor at right angles to the rails.

3,683,817

POWER AND FREE CONVEYOR SYSTEM WITH VARIABLE LENGTH CARRIERS

Robert A. Macomber, Novi, and Clarence A. Dehne, Farmington, both of Mich., assignors to Jervis B. Webb Company

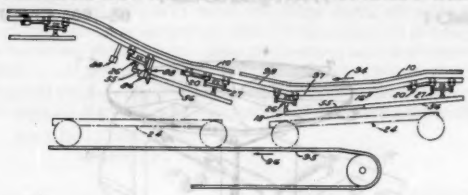
Filed Aug. 19, 1970, Ser. No. 64,975

Int. Cl. B61b *3/00*

U.S. Cl. 104—89 26 Claims

A conveyor system for track supported carriers, each having a driving dog engageable by a pusher, in which each carrier has front and rear trolleys connected by front and rear tow bar members that are relatively movable longitudinally of the track to extend or reduce the length of the carrier. A latch

device provides a plurality of selectable relative positions of the tow bar members and a latch release mounted adjacent the carrier track permits the carrier length to be changed as desired. The length of a carrier may be changed by installing



the latch release on an inclined section of track; or the carrier length may be adjusted as desired by stopping one of the carrier trolleys, releasing the latch device, and moving the other trolley by an auxiliary pushing apparatus.

3,683,818

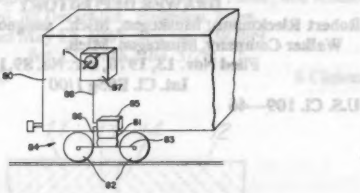
CAR STABILIZING CONTROL SYSTEM

Franz Meir, Herzogstandstr. 3, 8120 Weilheim; Hans Pollinger, Raenfarnstr. 65, 8 Munich 45, and Bernhard Schmucker, Am Werkkanal 10, 813 Starnberg, all of Germany

Continuation-in-part of Ser. No. 798,403, Feb. 11, 1969, abandoned, and a continuation-in-part of Ser. No. 798,405, Feb. 11, 1969, abandoned. This application June 7, 1971, Ser. No. 150,658

Int. Cl. B60g *21/06*; B61f *5/10, 5/24*

U.S. Cl. 105—164 **19 Claims**



A system is disclosed for controlling the air cushion suspension system of a railway vehicle so that the vehicle is tilted in the proper direction in response to following a curvilinear path. Control signals are generated from a gyroscope in response to the curvilinear movement of the vehicle. In response to these control signals signals indicating angular acceleration and angular velocity of the vehicle are generated. In response to the angular acceleration and velocity signals direction actuating signals are generated from two pair of AND circuits connected to two OR circuits with the direction actuating signals controlling the air cushion suspension to tilt the vehicle in the proper direction when travelling a curvilinear path.

3,683,819

Patent Not Issued For This Number

3,683,820

AUTOMATIC HOPPER GATE LOCK

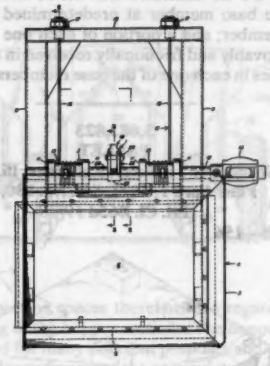
Walter L. Floehr, 1043 1/2 Nebraska Ave., Toledo, Ohio

Filed Sept. 1, 1970, Ser. No. 68,602

Int. Cl. B61d *7/20, 7/26*; E05b *65/14*

U.S. Cl. 105—282 R **7 Claims**

An automatic locking mechanism for a cable drive discharge gate, in which a counterweighted cam is positionable in the path of movement of the operating shaft of the cable drive between open and closed positions and trippable by the



shaft in opening and closing movements of the gate for automatically locking the gate in closed position.

3,683,821

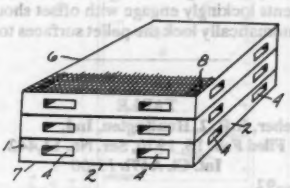
PALLET

Robert T. Mangold, 6037 Swanville Rd., Erie, Pa.

Continuation-in-part of Ser. No. 38,778, May 19, 1970. This application Sept. 24, 1970, Ser. No. 75,120

Int. Cl. B65d *19/38, 21/00*

U.S. Cl. 108—53 **3 Claims**



Stacked empty pallets having registering sockets in adjoining surfaces are interlocked by latch members carried by yieldable arms extending from the mid sections of the sockets and yieldably projecting from the socket of one pallet into the corresponding socket of an adjoining pallet.

3,683,822

DISPOSABLE PALLET

Joe R. Roberts, 32 West Ogden, Hinsdale, Ill., and James L. Torrence, 806 Forest Rd., La Grange Park, Ill.

Filed April 8, 1970, Ser. No. 26,670

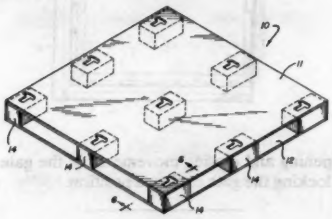
Int. Cl. B65d *19/12*

U.S. Cl. 108—56 **3 Claims**

The pallet includes a plurality e.g., 2 or more, commonly 3) of parallel spaced, elongated base members interconnected by a plurality e.g., 2 or more, commonly 6) of parallel spaced, elongated tie members. The base members and the tie members are preferably formed from blanks of double faced corrugated paperboard material which are scored and folded to

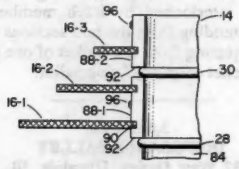
form each member with a triangular cross section and a hollow interior. Each one of the base members has triangular notches or openings formed therein which are equal in number to the tie members and which extend transversely through the base member at predetermined locations along the base member; and a portion of each one of the tie members is removably and frictionally received in one of the triangular notches in each one of the base members.

3,683,823
PALLET
Donald E. Schmid, 467 S. Foley, Kankakee, Ill.
Filed April 1, 1971, Ser. No. 130,165
Int. Cl. B65d *19/18*
U.S. Cl. 108—156 **6 Claims**



A pallet which includes a top and a bottom pallet surface of corrugated paperboard or the like which are fastened to a number of blocks of a plastic material such as polystyrene by foldable interlocking elements. These interlocking elements are precut or otherwise formed in the pallet surfaces, and are lockingly affixed to the blocks by extending them into a void in the blocks. Upon being extended into the voids, the interlocking elements lockingly engage with offset shoulder means therein, to automatically lock the pallet surfaces to the blocks.

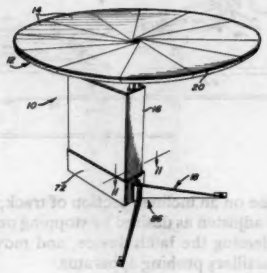
3,683,824
TABLE
James W. Weber, R.R. 2, Huntington, Ind.
Filed Feb. 16, 1970, Ser. No. 11,442
Int. Cl. A47b *13/00*
U.S. Cl. 108—92 **7 Claims**



A table suitable for use as a picnic or patio table is provided comprising a metal drum having integrally formed, annular ribs thereon, the drum being vertically disposed with one end resting upon a supporting surface. An extended-area top is provided having a central opening formed therein through which the upper end of the drum extends, the top being supported by the upper rib.

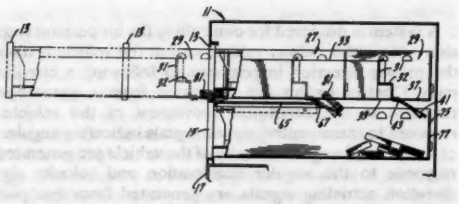
3,683,825
FOLDING TABLE
Marvin Sheldon, Tioga, N. Dak.
Filed Nov. 23, 1970, Ser. No. 91,783
Int. Cl. A47b *3/00, 1/00*
U.S. Cl. 108—33 **9 Claims**

A plurality of pie-shaped interleaved members have their apices connected together to allow the members to fan out in a manner completing a round tabletop. A container which serves to store the tabletop, when the latter is in a collapsed condition, has hinge means interconnecting the container with the interleaved members. This connection allows the container to act as a support for the roundtop. When the members



are collapsed, the interleaved hinge means allows the interleaved members to be moved into the container. Leg members are attached to the container so that the combination of container and attached leg means serves as a support structure for stabilizing the tabletop.

3,683,826
DRAWER DEPOSITORY
Robert Rieckmann, Muskegon, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.
Filed Nov. 13, 1970, Ser. No. 89,167
Int. Cl. E05g *1/00*
U.S. Cl. 109—46 **6 Claims**



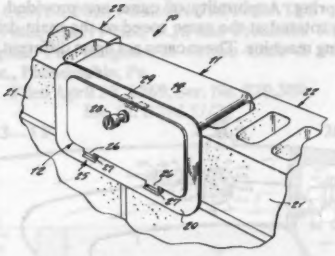
A teller pedestal for use in a financial institution or other money handling activities having at least two drawers each of which has separate locking means. The upper drawer has a trap door in a rear portion thereof which is separate from a currency tray containing front portion. A security partition is located between the upper and lower drawers and extends from the front of the pedestal rearwardly terminating short of the rear of the pedestal. The trap door has a cam surface which engages the security partition to close the trap door when the upper drawer is moved to its open position. The trap door opens by gravity when the upper drawer is moved to its closed position allowing currency placed in the rear portion of the upper drawer to fall into the lower and separately locked depository drawer.

3,683,827

LOC-BLOX

Norman D. Enright, 2170 San Fernando Dr., Elm Grove, Wis.

Filed Dec. 3, 1970, Ser. No. 94,771
Int. Cl. E05g 1/04
U.S. Cl. 109—50 1 Claim



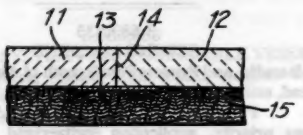
A vault that is built into the foundation of a house, the vault comprising a steel box which is of a size corresponding to the dimensions of a concrete block such as is used in a house foundation wall, and which accordingly replaces one of the concrete blocks by being fitted into the foundation wall, the steel box having a fire-resistant and heat-resistant coating on an inner side and being provided with an outwardly pivotable door which is insulated and provided with a simple latch with provisions for a padlock or which may include a security lock.

3,683,828

RECOMPOSITE CERAMIC ARMOR WITH METALLIC SUPPORT STRIP

Richard A. Alliegro, 119 Lovell Rd., Holden, Mass., and Addison W. Learned, 88 Dorset Rd., Holliston, Mass.

Filed May 12, 1967, Ser. No. 638,009
Int. Cl. F41h 5/04, 5/26
U.S. Cl. 109—83 6 Claims



Carbon steel, alloy steels, titanium strips, directly under the joints and free edges of the ceramic face plates of ceramic composite armor improves performance of the armor; metal strips should be 0.5 to 1.5 inches in width, from 0.010 inches to 0.125 inches in thickness, and have a modulus of elasticity of at least 5 million p.s.i.

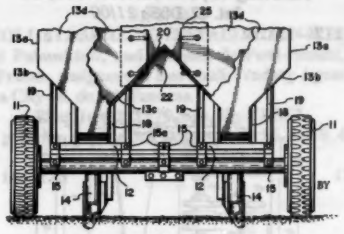
3,683,829

PLANTING MACHINE AND SIZE-ADJUSTABLE HOPPER THEREFOR

Wilfred H. Herrett, Filer, Idaho, assignor to Acme Manufacturing Company, Inc., Filer, Idaho

Filed Aug. 12, 1970, Ser. No. 63,084
Int. Cl. A01c 5/00
U.S. Cl. 111—73 6 Claims

A conveniently filled hopper for seed to be planted comprises hopper sections mounted in mutually spaced, side-by-side relationship on a vehicular frame provided with running gear. The spacing of the seed hoppers and of planting means carried thereby relative to one another can be adjusted in accordance with crop row spacing. Each set of mutually adjacent, sloping bottom walls of mutually adjacent hopper sections is freely straddled by a ridge plate that accommodates different spacings of such walls. Likewise, in preferred embodiments which have mutually adjacent hopper section end walls that rise above the bottom walls, end plates bridge such



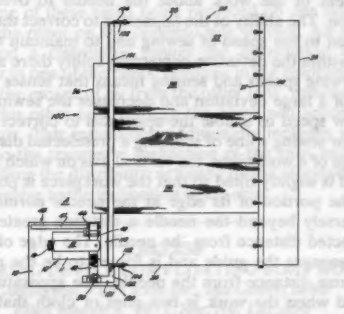
end walls to close the spaces therebetween regardless of the extent of spacing of the hopper sections. The hopper structure itself can be used for many different purposes and can be variously mounted depending upon the particular use.

3,683,830

FEED CONTROL FOR SEWING OPERATION

Eugene P. McClintock, Newport Beach, Calif., assignor to Kirsch Company, Sturgis, Mich.

Filed Dec. 16, 1970, Ser. No. 98,618
Int. Cl. D05b 9/06
U.S. Cl. 112—121.15 3 Claims

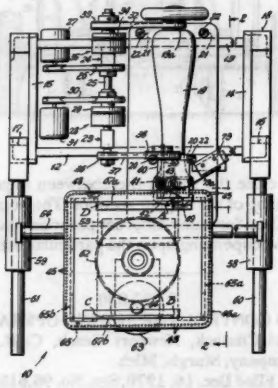


In a sewing operation wherein a stationary sewing machine is positioned adjacent one side of a movable table, the table having a smooth top which is adapted to receive a drapery fabric to be sewn, wherein a stationary buckrum dispensing device is supported adjacent the sewing machine so as to feed a strip of buckrum past the sewing head of the machine, the sewing machine being operative to sew the strip of buckrum to one edge of the fabric as the table conveys the fabric past the sewing machine, and wherein the table has a clamp mounted on the top thereof for releaseably securing an opposite edge of the fabric, the improvement comprising an elongated bar pivotably mounted above the table top adjacent and extending along the one side thereof, the bar being pivotable between a first position spaced from the table top to permit positioning of the fabric thereon and a second position in contact with the table top for holding the fabric while it is being sewn and for providing a reference line which may be used to indicate whether the table is moving faster or slower than the sewing machine. The improvement further comprises positioning the buckrum dispensing device on the throat side of the sewing head so as to feed the buckrum past the sewing head so that the stitches lie adjacent the side of the buckrum which is closest to the opposite edge of the fabric.

3,683,831
AUTOMATIC GUIDING APPARATUS FOR SEWING MACHINE

Ernest M. Junkins, 121 Wheeler Rd., Monroe, Conn.

Filed Aug. 18, 1969, Ser. No. 850,950
Int. Cl. D05b 21/00
U.S. Cl. 112—121.12 4 Claims



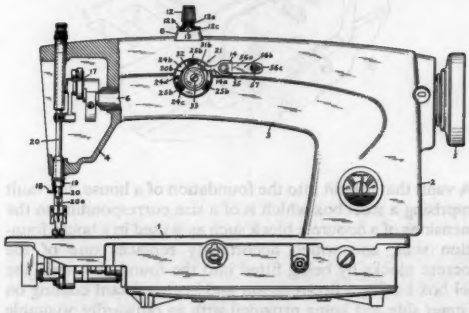
An apparatus for guiding work past a sewing machine needle along a predetermined path to form a line of stitching corresponding to the path with deviations of the work from a normal feed path to the needle being sensed and causing a pivotal movement of the work about the needle to overcome the deviation. The ability of the apparatus to correct the deviation is related to the speed of sewing and to maintain this sewing speed within the deviation correcting ability there are fast and slow sewing speeds and sensing means that senses the occurrence of a large deviation and decreases the sewing speed to the slow speed to enable the apparatus to correct the deviation. For sewing a line of stitching a preselected distance from the edge of a workpiece, the vertical axis on which the work is pivoted is slightly tilted so that the workpiece is positioned to have the portion of its edge at the needle normally extend transversely beyond the needle a distance greater than the preselected distance from the needle. The edge of the workpiece engages the guide and is forced to be the preselected transverse distance from the needle. The apparatus utilizes a method when the work is two plies of cloth that are to be sewed together of holding the plies at a plurality of spaced points and feeding it at a determined rate while the feed dogs of the sewing machine are set to advance the cloth at a faster rate. The presser foot is made to exert only a light pressure on the cloth to permit slippage therebetween in order to minimize relative shifting and stretching of the two plies as they are sewn together with stitches having a stitch length determined by the rate of the apparatus.

3,683,832
THREAD CONTROL DEVICE FOR SEWING MACHINES

Edgar Scholj, Hinsdale, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed Sept. 4, 1970, Ser. No. 69,556
Int. Cl. D05b 49/00
U.S. Cl. 112—242 24 Claims

An improved thread control mechanism for sewing machines adapted to minimize breakage and entanglement of the needle thread in a two-thread sewing machine, and which insures the formation of a uniform and desirable line of stitching at high speeds of operation. It is particularly advantageous in connection with a lockstitch sewing machine, which at one stage in a cycle of operation of the machine must subject said thread to a quick take-up action when a loop of the thread has been passed around half of the circumference of a bobbin case. The improved mechanism eliminates the need for a coiled check spring which heretofore has been provided to present an arm in the path of movement of the thread after it leaves a thread tensioning device. By eliminating the need for the check spring, the extent of movement of a thread eyelet at the outer end of a take-up lever is reduced, from the extent that was required in prior constructions involving a check spring. A plurality of cams are provided on a shaft which is rotated at the same speed as the main drive shaft of the sewing machine. These cams act upon different portions of

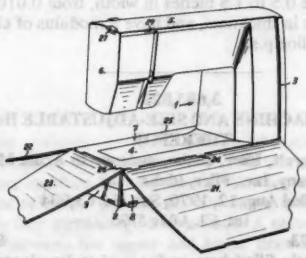


the needle thread as the latter passes through a succession of eyelets provided on certain prongs of rockable members. Normally these members are retained in an active position, but they are shifted to an inactive position upon the lifting of the pressure foot. The thread control means of the present invention exercises the desired control over the needle thread when the machine is used on a variety of types of work which have normally, heretofore, required special adjustments and even changes in the mechanism when variations in the thickness and the nature of the work pieces being dealt with are involved.

3,683,833
SEWING MACHINE

Olindo Baruffa, and Francis Piomb, both of Aire-Geneva, Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed April 29, 1970, Ser. No. 32,956
Claims priority, application Switzerland, May 9, 1969, 7112/69
Int. Cl. D05b 75/00
U.S. Cl. 112—258 11 Claims



A sewing machine has a frame formed of a base, a column, a lower free arm having an upper working surface, an upper arm and a head. A material supporting means in the shape of a retractable shelf is connected to the base by a set of articulated parts, this shelf being displaceable in a vertical direction between an operative level in which it fits around the lower

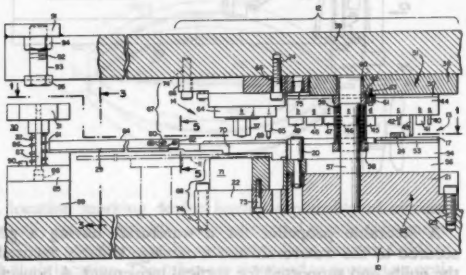
free arm at the working surface thereof, and a retracted level below the lower free arm to allow access thereto. Flaps are hinged to this shelf and can be folded against the frame to form a case therewith or can be folded down to allow access to the machine for operation thereof.

3,683,834

CONTAINER FORMING APPARATUS

Vinson S. Potts, Cherry Hill, N.J., and Frederick W. Duhan, Philadelphia, Pa., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed April 30, 1969, Ser. No. 820,388
Int. Cl. B21d *51/26*
U.S. Cl. 113—1 F 26 Claims



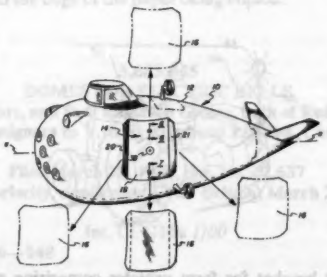
A press apparatus for forming container closures by successive operations at a plurality of stations, one of the stations including a die assembly for forming closure tabs from a continuous strip by a plurality of successive punching operations, for blanking the tabs out of the strip, and for prestaking the tabs on closure ends. A scrap chute connects the combination die assembly with a scrap chopper for severing the blanked-out portion of the strip into small pieces of readily disposable scrap.

3,683,835

BALLAST SYSTEM FOR SUBMERSIBLE VESSELS

John M. Deslierres, Rolling Hills, Calif., assignor to North American Rockwell Corporation

Filed April 1, 1970, Ser. No. 24,777
Int. Cl. B63g *8/24*
U.S. Cl. 114—16.4 1 Claim



This disclosure relates to submersible vessel ballast containers which are capable of being jettisoned to gain positive buoyancy. Each container is oppositely disposed on each side of the vessel and shaped to conform to the hull configuration thereof. Sloping sides of the ballast containers permit jettisoning of the containers in an emergency operation in any submarine attitude nose-down, upside-down, or laying on its side, and utilizing a single point release system to guarantee release.

3,683,836

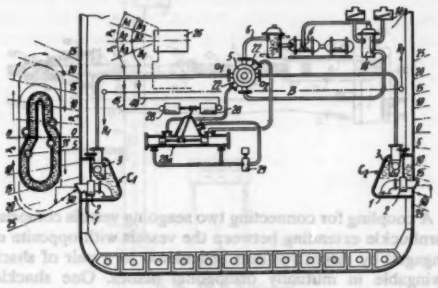
Patent Not Issued For This Number

3,683,837

ANTI-ROLL STABILIZING INSTALLATION FOR SHIPS

Jean Paul Polouektoff, and Jacques de Font-Reaulx, both of Paris, France, assignors to Snowball Trading Agencies S.A., Panama City (R. de P.), Panama

Filed July 2, 1970, Ser. No. 51,857
Claims priority, application France, July 15, 1969, 6924068
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 11 Claims



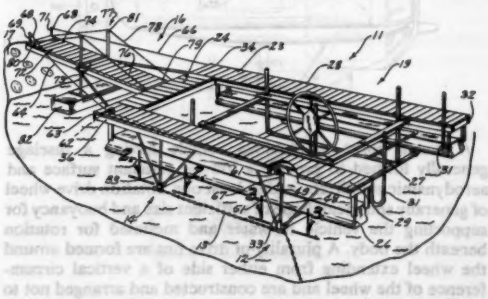
The installation is particularly useful for stabilizing ships. It comprises at least one group of two submerged tanks open to the sea, one of these tanks being provided on one side of the ship and the other on the opposite side thereof. An air compressor and a distributor ensure the distribution of compressed air in one of the tanks, resulting in the emptying of this tank, and the escape of air from the other tank, resulting in the filling of this other tank through the combined action of this escaping air. This installation additionally includes a device sensitive to the transverse inclination of the ship, and means for controlling the distributor actuated by the aforementioned device sensitive to the inclination of the ship.

3,683,838

MOORING DEVICE FOR FLOATING BOAT HOIST

Byron L. Godbersen, 710 Circle Dr., Ida Grove, Iowa

Filed March 8, 1971, Ser. No. 121,650
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 10 Claims



A novel mooring device for floating equipment, such as boat hoists and boat docks, is provided herein which is especially useful on variable waters. This mooring device comprises first means mounted on opposing sides of the equipment

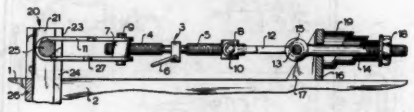
for releasably securing a chain therein and, in alignment therewith, chain guiding means. The chains are secured at their respective ends to the shore and the bottom of the body of water and pass through the first means and the guiding means. A line is secured to the first means and utilized to release the chains secured therein thereby allowing the floating equipment to be readily relocated by one man as the water level in the body of water changes.

3,683,839

SPRING-LOADED COUPLING FOR SEAGOING VESSELS

Heinrich Harbisch, Werftstr. 47, 4100 Duisberg, Germany

Filed Aug. 21, 1970, Ser. No. 65,992
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 A 9 Claims



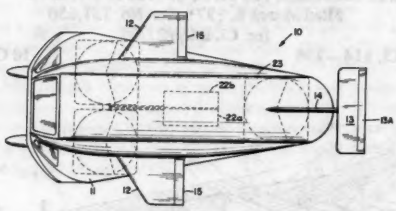
A coupling for connecting two seagoing vessels comprises a turnbuckle extending between the vessels with opposite ends engaged by respective nuts articulated to a pair of shackles swingable in mutually orthogonal planes. One shackle is pivotally attached to an axially spring-loaded drawbar on one vessel. The free end of the other shackle has a crossbolt which slides in a vertical track mounted on the confronting side of the second vessel after insertion through a vertical slot in the track and subsequent rotation through 90°. The vessels can be drawn together by rotating the turnbuckle in such a way as to shorten the coupling.

3,683,840

WATER BORNE AMPHIBIOUS VEHICLE

Raymond Sidney Russell, Yosemite Highlands, P.O. Box 409, Groveland, Calif.

Filed Feb. 8, 1971, Ser. No. 113,529
Int. Cl. B63b *1/10, 1/36*
U.S. Cl. 115—19 9 Claims



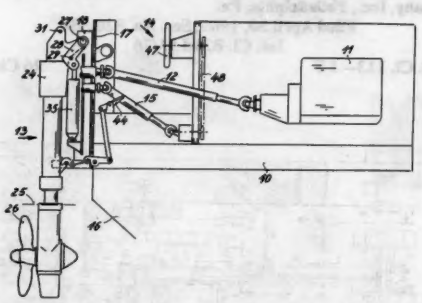
A water borne amphibious vehicle having a fuselage generally formed to provide a low air resistant surface and aerodynamic stabilizers, and at least one flotation drive wheel of generally spherical shape of sufficient size and buoyancy for supporting the vehicle in water and mounted for rotation beneath the body. A plurality of drive fins are formed around the wheel extending from either side of a vertical circumference of the wheel and are constructed and arranged not to extend above a plane tangent to the surface of said wheel at any point on said vertical circumference. In one embodiment a hollow inflated flotation drive tube forms a closed loop "V-belt" drive between the vehicle motor and flotation drive wheel.

3,683,841

LIFT AND SWINGING DEVICE FOR A STEERABLE PROPELLER

Franz Krautkremer, Im Muhren, Germany, assignor to Schattel of America Inc., Miami, Fla.

Filed June 8, 1970, Ser. No. 44,368
Claims priority, application Germany, May 15, 1970, P 20 23 949.0
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 R 8 Claims



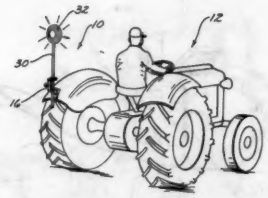
A steerable propeller for a watercraft having a guide secured to the watercraft and a carriage slidably secured to the guide and supported for vertical movement. A housing is pivotally secured to the carriage and is pivotable between first and second positions. The housing includes means having a propeller rotatably secured thereto which extends below the waterline when the housing is in the first position. First drive means are provided for raising and lowering the carriage in the guide to effect a depth adjustment of the propeller. Second drive means are provided for moving the housing at least toward the second position. Cooperating means are adapted to cooperate with the first and second drive means to permit a movement of the housing, including the means having the propeller, to the second position, the second position being spaced at least 180° from the first position.

3,683,842

LIGHT BRACKET FOR FARM VEHICLES

Kenneth G. Logan, Des Moines, Iowa, assignor to Sablite Corp., Des Moines, Iowa

Filed May 22, 1970, Ser. No. 39,655
Int. Cl. B60q
U.S. Cl. 116—28 1 Claim



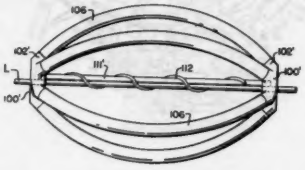
A light bracket for farm vehicles comprising a vertically disposed first bracket member having second and third bracket members extending horizontally from the upper and lower ends thereof respectively. The second and third bracket members each have an opening formed therein which receive a warning light supporting stem therein. A thumbscrew means threadably extends through the first bracket member and is adapted to engage the stem to maintain the stem in selected positions of its vertical movement so that the warning light can

be raised when the vehicle is being used on the highway and so that the warning light can be lowered when the vehicle is not being used on the highway. A fourth bracket member extends from the third bracket member and is secured to the vehicle.

3,683,843
LOCATION MARKER

Seymour M. Schlein, University Heights, Ohio, assignor to The Fanner Manufacturing Company, Cleveland, Ohio

Division of Ser. No. 660,536, June 13, 1967, Pat. No. 3,521,569, which is a continuation-in-part of Ser. No. 593,100, Nov. 9, 1966, abandoned. This application March 23, 1970, Ser. No. 24,925
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 15 Claims

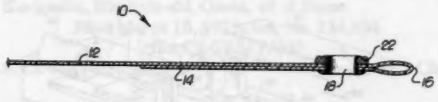


A location marking device having a plurality of circumferentially spaced, brightly colored curved plastic tube members. These members can be secured to lines near air fields to mark their location. The tubes are arranged to present an optical illusion of rotation when viewed by a person in a moving vehicle.

3,683,844
LINE GUIDE

Douglas G. Wilkin, P.O. Box 8155, La Crescenta, Calif.

Filed Sept. 21, 1970, Ser. No. 73,795
Int. Cl. B42d *9/00*
U.S. Cl. 116—119 3 Claims

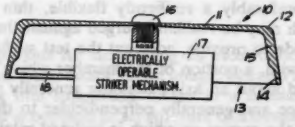


The line guide comprises a pair of thin plastic sheets held together by a rivet, there being a prestressed resilient washer interposed between at least one of the plies and the head of the rivet whereby a spring pressure is always provided for clamping to the edge of the paper being copied.

3,683,845
DOMES FOR ELECTRIC BELLS

John Doggart, and Paul Rogerson Gleave, both of Reddish, England, assignors to V. & E. Friedland Limited, Chesire, England

Filed March 25, 1970, Ser. No. 22,637
Claims priority, application Great Britain, March 28, 1969, 16,521/69
Int. Cl. G10k *1/00*
U.S. Cl. 116—148 6 Claims

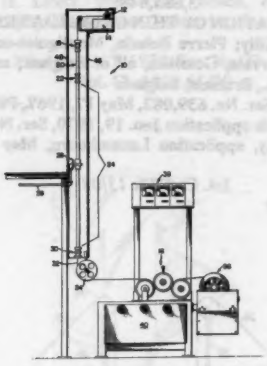


A bell member for an electric bell, in which the thickness of the bell member varies from place to place in accord with the desired total characteristics of the bell. Variations in the vibrational mode of the bell with variations in the thickness of the base and skirt are particularly considered.

3,683,846
FILAMENT PLATING SYSTEM

Norman E. Flournoy; Gerald M. Eisenlohr; Frank R. Black, Jr., and James E. Schultz, all of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,412
Int. Cl. C23c *13/10*
U.S. Cl. 118—33 14 Claims

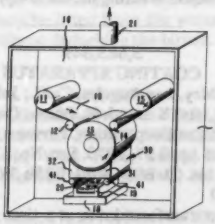


A plating system for a fine conductive substrate is provided wherein the substrate is pulled from an eddy-current brake type letoff unit through combination gas seals and electrical contact units to and through a plating chamber and outlet gas seals and electrical contacts by a capstan-drive speed regulating mechanism. After leaving the capstan-drive unit the plated filament is random wound on a spool which is friction driven via its rim so that tension in the plating chamber is independent of spool tension and which drive automatically compensates for changes in diameter as spooling progresses.

3,683,847
APPARATUS FOR VACUUM METALLIZING

John T. Carleton, Arlington, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1971, Ser. No. 117,012
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 7 Claims



Vacuum metallizing apparatus wherein metal contained in a crucible in a vacuum chamber is melted to form vapor adapted to metallize a continuously moving web of sheet material with metal vapor as it moves therepast and having means to direct such vapor only onto preselected portions of the web, such means including a vapor masking means posi-

tioned between the crucible or vapor supply source and the web and consisting of a heat conductive frame having slots therein for receiving vapor masking ribs (of various shapes), which ribs are slidably positioned in thermal contact with the frame, in the slots. The frame is cooled by cooling means connected to it, which cooling means also cool the masking ribs of the vapor masking means by reason of the thermal contact between the frame and the ribs. Connecting material may be inserted between the ribs and the surface portions of the frame defining the slots to thermally connect the ribs to the cooling means.

3,683,848

FORMATION OF THIN OXIDE LAYERS

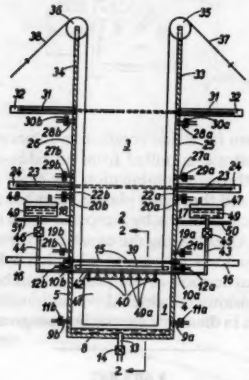
Emile Plumat, Gilly; Pierre Bohain, Montignies-sur-Sambre, and Albert Servais, Gosselies, all of Belgium, assignors to Glavenben S.A., Brussels, Belgium

Division of Ser. No. 639,082, May 17, 1967, Pat. No. 3,519,467. This application Jan. 19, 1970, Ser. No. 8,156

Claims priority, application Luxembourg, May 18, 1966, 51,137

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 **5 Claims**



Coating apparatus includes plural chambers having at least restricted communication therebetween to inhibit the transfer of fluid treating material but not of a substrate. A primary treating chamber includes means for supplying a vapor solvent, means for applying a spray solution and means for delivering water vapor. Heating means are provided.

3,683,849

COATING APPARATUS

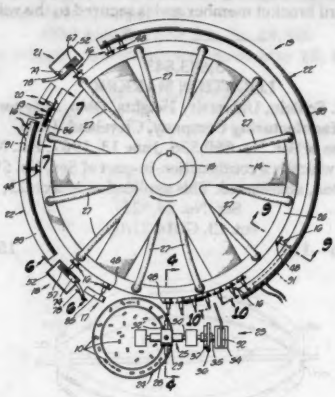
Raymond D. Atchley, Los Angeles, Calif.; John B. Pegram, Los Angeles, Calif., and Kenneth K. Dixon, Camarillo, Calif., assignors to K. Dixon Corporation, Tarzana, Calif.

Filed April 27, 1970, Ser. No. 32,141

Int. Cl. B05c *1/00*; B25h *5/08*

U.S. Cl. 118—50 **5 Claims**

Capacitors are transferred one at a time by a vacuum feed chuck to one of a plurality of vacuum mounting heads which are moving along a definite path. As the capacitors are conveyed along the path, and exposed portion thereof to be coated is submerged to a prescribed depth in a liquid coating material. Next the vacuum mounting head is rotated to expose a further portion of the item to be coated in operating orientation, after which this portion then receives a coating as before. The freshly coated part is then passed through a lehr where the coating material is heat hardened. Finally, the capacitor is



contacted by an arm as the vacuum head carrying it moves along the path, thereby disengaging it from the head and allowing it to drop into a receptacle.

3,683,850

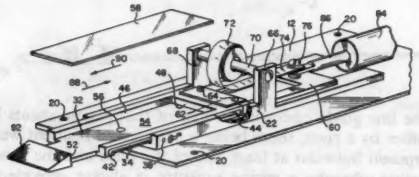
APPARATUS FOR PREPARING BLOOD SPECIMENS ON SLIDES

Robert H. Grabhorn, Indianapolis, Ind., assignor to Systematiks, Inc., Indianapolis, Ind.

Filed Sept. 14, 1970, Ser. No. 71,728

Int. Cl. B05c *11/02*

U.S. Cl. 118—100 **24 Claims**

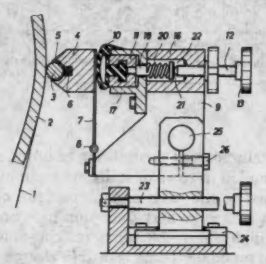


An apparatus for preparing blood specimens on slides having a test surface comprising guide means, a carrier mounted on the guide means for movement back and forth therealong, the carrier providing means for holding the slide to expose its test surface to receive a drop of blood at a predetermined spot thereon. A member extends toward the path of movement of the carrier preferably but not necessarily to engage the test surface of the slide held thereby. Drive means is provided for moving the carrier at a predetermined speed in one direction along the guide means, the carrier being movable in the opposite direction along the guide means to the point at which such a drop of blood on the said predetermined spot just contacts and wets the said member. The member which engages the slide is preferably a resiliently flexible, thin strip-like member which may be resiliently urged against the test surface of the slide to provide, adjacent the test surface and in contact therewith, a portion of the member which is at least slightly curved about an axis extending generally parallel to the test surface and generally perpendicular to the path of movement of the carrier or which is inclined relative to the test surface.

3,683,851
APPARATUS FOR REGULATING THE THICKNESS OF A COATING ON SHEET MATERIAL

Siegfried Nolden, Dusseldorf, Germany, assignor to Jagenberg-Werke AG Patentabtellung, Dusseldorf, Germany

Filed Feb. 17, 1971, Ser. No. 115,950
Claims priority, application Germany, Feb. 21, 1970, P 20 08 082.4
Int. Cl. B05c *11/02*
U.S. Cl. 118—126 3 Claims

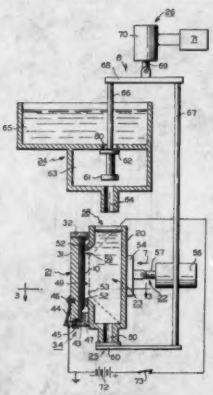


A round-rod scraper is used to regulate the thickness of a coating on paper. The scraper is carried in a holder which is attached to one end of a pivotally mounted lever whose other end is carried by a bracket. The bracket also carries a tube filled with compressed air bearing against the lever through the intermediary of a plurality of independently displaceable pressure elements. The bracket itself is capable of having its position adjusted with the individual pressure elements held in fixed positions relative to one another.

3,683,852
ELECTROPHOTOGRAPHIC DEVELOPING APPARATUS

Isao Yamaguchi, 1-28, Saigo-dori, Moriguchi-shi, Osaka; Toshiharu Sasaki, 1, 3-chome, Shinsenri-nishimachi, Toyonaka-shi, Osaka, and Yasutaka Nakajima, 2, 2-chome, Korigaoka, Hirakata-shi, Osaka, all of Japan

Filed March 15, 1971, Ser. No. 124,036
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 7 Claims

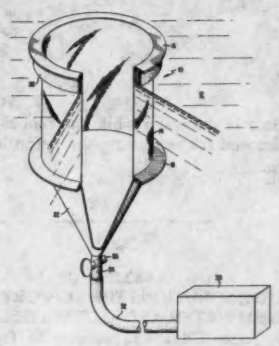


An apparatus for developing an electrophotographic film carrying an electrostatic latent image, wherein said film is supported by film supporting means in a substantially vertical plane, and is opposed to an aperture of a developing chamber which has an outlet formed at a lower portion thereof and an air introducing opening formed at an upper portion thereof. Engaging means causes the film to be engaged over and close to said aperture by relative movement between the chamber and the film so as to form a space within the chamber capable of receiving a predetermined volume of liquid developer from a developer supply means. After the liquid developer is kept in the space for a predetermined time for development of the film, developer discharge means discharges the developer from the space through the outlet under the control of control means, and air is introduced into said space from said air introducing opening as the level of the liquid developer falls as the developer is discharged from the space.

3,683,853
FISH EGG INCUBATOR

Raymond H. Lewis, West Palm Beach, Fla., assignor to Oceanography Mariculture Industries, Inc., Riviera Beach, Fla.

Filed Sept. 17, 1970, Ser. No. 73,103
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 6 Claims



A fish egg incubator apparatus is provided which solves the problems of containing the fish eggs while gently circulating water around them for hatching purposes and subsequently transferring the larvae to other containers. The incubator includes a tubular water permeable container connected at each respective end with one of a pair of annular support rings and having a buoyant collar affixed to one of the support rings for floating the container in a body of water with the water permeable wall disposed below the water level therein. A funnel structure and a valve are provided at the bottom of the assembly for alternatively connecting the same to a submersible pump whereby water may be gently pumped into the interior of the tubular container or, upon hatching of the eggs, for closing the valve and slipping a tubular jacket having one closed end over the assembly from the bottom whereby the entire assembly may be lifted from the water and transferred to another area without disturbing the larvae.

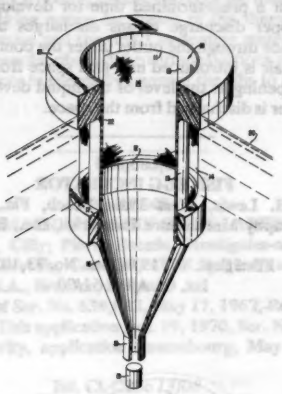
3,683,854
APPARATUS FOR SEPARATING VIABLE FISH EGGS FROM NON-FERTILIZED EGGS

Raymond H. Lewis, West Palm Beach, Fla., assignor to Oceanography Mariculture Industries, Inc., Riviera Beach, Fla.

Filed Sept. 17, 1970, Ser. No. 73,102
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 9 Claims

The property of certain marine fish eggs to become buoyant when they are fertilized is utilized by placing such eggs in a container having an upper portion with a water permeable wall, a lower funnel-shaped portion removably secured to the upper portion and a buoyant collar for floating the container

in a body of water with the water permeable wall disposed below the water level therein. After fertilization occurs, the buoyant viable eggs may be kept in the upper portion of the



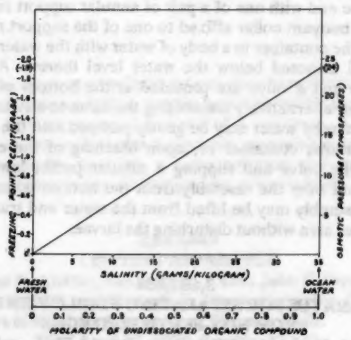
container afloat in the water while the funnel-shaped lower portion is removed for separating the unfertilized eggs collected therein.

3,683,855

AQUARIUM SOLUTIONS FOR SUPPORT OF BOTH FRESH WATER AND SALT WATER FISH

Leo Levitov, Jersey City, N.J., assignor to Tronic Products, Inc., Jersey City, N.J.

Filed Jan. 18, 1971, Ser. No. 107,260
Int. Cl. A01k *61/00*; C02b *1/18*
U.S. Cl. 119—5 **19 Claims**



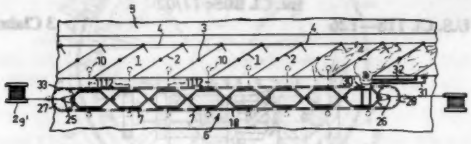
Undissociated, non-toxic, organic compounds and inorganic silicate compounds which are polymerized in the presence of acid phosphate salts added to the solutions having from one-third to two-fifths of ocean salt concentrations maintain the osmotic pressure of the solutions at the equivalent of the osmotic pressure of natural ocean water and provide media for aquariums which will support both fresh water and salt water fish.

3,683,856

MILKING INSTALLATION FOR COW STABLES

Stig Janson, and Ulf Stig Janson, both of Ryholms Gods, Moholm, Sweden

Filed Dec. 15, 1969, Ser. No. 885,097
Int. Cl. A01j *05/00, 09/08*
U.S. Cl. 119—14.11 **6 Claims**



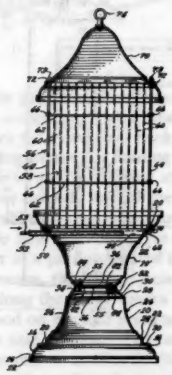
A milking installation for the milking of cows, more or less permanently installed in rows of stalls, wherein milking members to be applied to the teats of the cows are connected or connectible to a milk pipe and a vacuum pipe and supported by a carriage, which is movable along milking stations at each stall, the milking members being movable along guideways on the carriage, so as to remain motionless relatively to the milking stations during milking and to move back from the rear end of the carriage to the forward end for renewed adaptation to the teats of further cows during the motion of the carriage along the row of milking stations. The invention comprises also means to perform most of the movements and connecting and release operations automatically so that the main occupation of an operator is to place the teat cups in position on the udders of the cows. The guideway for the milking members on the carriage can be either a closed endless track, one or more movable chains, etc. or only a return track for the milking members during their motion from the rear end to the forward end of the carriage.

3,683,857

FLOOR CAGE

Bernard Yellin, 5252 S. Kulmar Ave., Wilmette, Ill.

Continuation of Ser. No. 807,371, March 14, 1969, abandoned. This application March 26, 1971, Ser. No. 128,539
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **5 Claims**



A floor cage which includes a stand for the cage formed of a pair of base members of generally similar shape and of a hollow construction and molded of a plastic material, each having a horizontal end wall, with the base members when in assembled relation positioned so that one member is inverted with

respect to the other, with the end walls adjacent each other and with the two base members connected together by fastening elements, with the inverted base member forming the upper part of the stand to receive and support a collapsible cage body and the other base member forming the lower part of the stand.

3,683,858

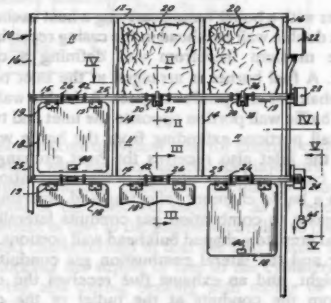
Patent Not Issued For This Number

3,683,859

ANIMAL FEEDING DEVICE

Lloyd L. Kirk, Route 3, Box 326-C, Paris, Wis.

Filed Aug. 5, 1970, Ser. No. 61,052
Int. Cl. A01k *05/00*
U.S. Cl. 119—51.13 11 Claims



An automatic tripping device for sequentially releasing a supporting floor member in a series of compartments to discharge the contents of the compartment. The floor member is supported by a tripping arm which is moved by a flexible cord being pulled from a curved dimension across a shorter straight line dimension. A solenoid device exerts the pulling force and after moving the tripping arm the slack in the flexible cord is taken up by a take up means to position the cord for tripping the next adjacent tripping arm.

3,683,860

Patent Not Issued For This Number

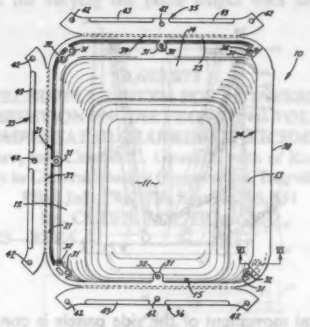
3,683,861

FEEDING BOWL

Robert O. Bauspies, Holland, Mich., assignor to Maes Incorporated, Holland, Mich.

Filed Jan. 11, 1971, Ser. No. 105,557
Int. Cl. A01k *05/00*
U.S. Cl. 119—61 4 Claims

A one-piece plastic receptacle having a substantially rectangular upper edge and four integral rim elements hingedly secured along said upper edge for movement into coplanar positions along said edge. Connecting means secures said rim



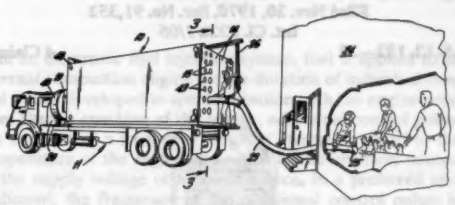
elements in said positions and means is provided for mounting the receptacle to an upright support.

3,683,862

POULTRY SUCTION LOADING APPARATUS AND METHOD

Frank N. Reynolds, Auburn, Maine, assignor to Poultry-Vac, Inc., Lewiston, Maine

Filed Jan. 18, 1971, Ser. No. 107,334
Int. Cl. A01k *29/00*
U.S. Cl. 119—82 40 Claims



A method and apparatus for sucking loading poultry into transportable compartments, protecting the poultry in loading and during transportation.

3,683,863

Patent Not Issued For This Number

3,683,864

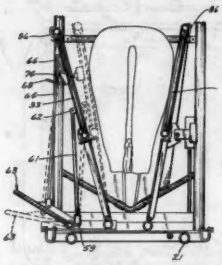
CATTLE CHUTE

Marvin H. Priefert, R.R. 1, Mt. Pleasant, Tex.

Filed Oct. 21, 1970, Ser. No. 82,609
Int. Cl. A61d *03/00*
U.S. Cl. 119—99 5 Claims

The cattle chute includes a pair of transversely opposite side panels of of which constitute a squeeze panel that is pivotally movable about a horizontal axis into a from an animal squeezing portion relative to a second or normally stationary panel. End gates at opposite ends of the cattle chute control the entrance and exit of an animal fore and aft of the chute, with at least one of such gates having adjustable neck engaging members for engaging and restraining an animal positioned in the chute. The normally stationary panel is pivotally movable

about a vertical axis from a closed position opposite the squeeze panel to an open position providing a side exit for the



chute. Pivotal movement of the side panels is controlled by foot actuated levers that are arranged at one end of the cattle chute.

3,683,865

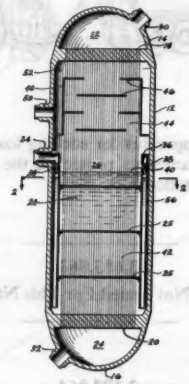
Patent Not Issued For This Number

3,683,866

SUPERHEATING STEAM GENERATOR

Paul C. Zmola, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 20, 1970, Ser. No. 91,352
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 4 Claims



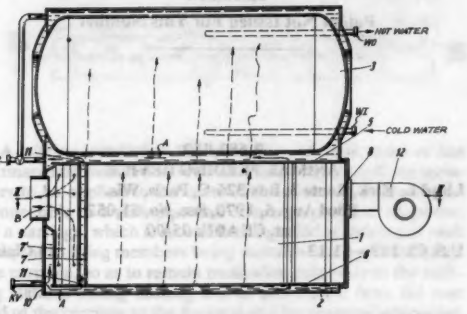
Described herein is a shell and tube vapor generator in which vaporizable liquid is evaporated and superheated within the same vessel. Downflow and upflow passages are provided for conducting the vaporizable liquid in heat exchange relation with the heating medium that is conducted through the tubes. The downflow passages into which subcooled feedwater is introduced are defined by a plurality of mutually spaced conduits disposed between the shell wall and the tube bundle. The arrangement permits the shell wall to be wetted by liquid at substantially saturated temperature throughout the evaporation region of the chamber thus to reduce the stresses within the tube material caused by thermal loading.

3,683,867

BOILER

Hans Viessmann, Battenberg, Eder Im Hain, Germany

Filed Nov. 20, 1970, Ser. No. 91,439
Claims priority, application Germany, Dec. 27, 1969, P 19 65 037.4; Jan. 28, 1970, P 20 03 690.2
Int. Cl. F22b *7/00*
U.S. Cl. 122—136 R 7 Claims



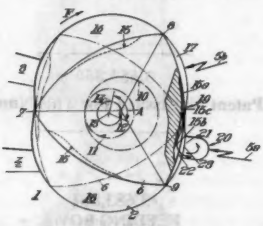
A boiler with a boiler casing carrying a heat exchange medium and a double wall bulkhead in the casing receiving the heat exchange medium therefrom and defining a combustion chamber. A fuel burner is arranged at the inlet of the combustion chamber and produces gases. A double wall bulkhead having a baffle wall portion opposite the inlet and two arcuate lateral wall portions extending from the baffle wall portion towards the inlet also receives the heat exchange medium from the casing and is positioned in the combustion chamber to define a baffle chamber reflecting and reversing the combustion gases to combustion gas conduits laterally adjacent the lateral arcuately shaped bulkhead wall portions. The baffle chamber and the lateral combustion gas conduits have the same height, and an exhaust flue receives the combustion gases from the conduits at the outlet of the combustion chamber.

3,683,868

ROTARY PISTON INTERNAL COMBUSTION ENGINES

Jean Panhard, Paris, France, assignor to Societe de Constructions Mechaniques, Panhard & Levassor, Paris, France

Filed March 18, 1970, Ser. No. 20,663
Claims priority, application France, March 18, 1969, 6907679
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.13 7 Claims



There is arranged in the peripheral wall of the engine casing, a turbulence chamber which communicates through a large opening with the inside of the casing in a zone such that on the passage of a crest of the piston in this zone, there is substantial equality between the pressures of the chambers

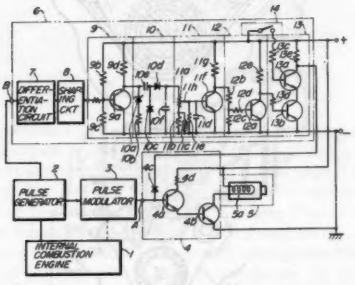
separated by the crest, the volume of each hollow on the perimeter of the piston being reduced by an amount substantially equal to the volume of the turbulence chamber for a given compression ratio. One or more spark plugs are arranged in the turbulence chamber.

3,683,869

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Isezi Kamazuka, Kariya, and Katsuhiko Ohiwa, Handa, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichiken, Japan

Filed Feb. 3, 1970, Ser. No. 8,358
Claims priority, application Japan, Feb. 3, 1969, 44/8361
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **6 Claims**



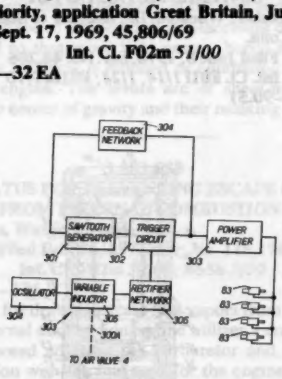
A fuel injection control system used for internal combustion engines provided with electromagnetic fuel injectors, the said control system including electronic circuits to control the opening period of the injection valves so as to feed an appropriate amount of fuel to the engine according to peripheral conditions and characterized in that the said system includes means for stopping the supply of fuel to the cylinders during no-load driving and during braking with motor to thereby prevent the discharge of harmful exhaust gases.

3,683,870

FUEL INJECTION SYSTEMS

Harold Ernest Jackson, Devon, England, assignor to Petrol Injection Limited, Devon, England

Filed June 15, 1970, Ser. No. 46,201
Claims priority, application Great Britain, June 27, 1969, 32,531/69; Sept. 17, 1969, 45,806/69
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **13 Claims**



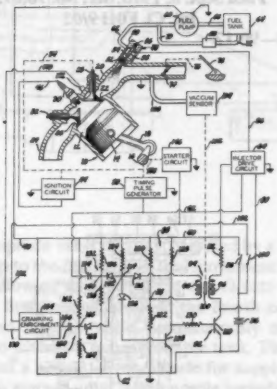
A fuel injection system in which fuel flow through the injector nozzles is controlled by electrically operable interrupter valves. Electrical pulses to operate the interrupter valves are generated at constant frequency and the length of the pulses is varied with an engine operating parameter, for example engine air intake. Suitable pulse generating circuits and an arrangement for varying the pulse length with air intake are described.

3,683,871

FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE PROVIDING VOLTAGE COMPENSATED CRANKING ENRICHMENT

Paul N. Barr, and Charles C. Gambill, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 17, 1970, Ser. No. 55,831
Int. Cl. F02b *3/00*; F02n *17/00*
U.S. Cl. 123—32 EA **10 Claims**



In an electronic fuel injection system, fuel is applied to an internal combustion engine for the duration of individual control pulses developed in synchronization with the engine rotation. During cranking of the engine, additional control pulses are supplied at a frequency which is inversely related to the temperature of the engine and which is also inversely related to the supply voltage of a power source. In a preferred embodiment, the frequency of the additional control pulses is doubled when the supply voltage falls below a minimum acceptable level.

3,683,872

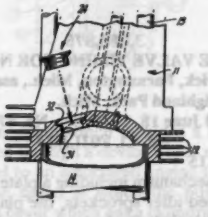
Patent Not Issued For This Number

3,683,873

SPARK PLUG HOLE CONSTRUCTION AND METHOD

Carl M. Tarter, Healdsburg, Calif., assignor to T&W Manufacturing Corp., Santa Rosa, Calif.

Filed June 8, 1970, Ser. No. 44,162
Int. Cl. F02f *1/36*; F22d *19/10*
U.S. Cl. 123—41.82 **4 Claims**



The spark plug hole of an engine part is provided with a bushing including an internally threaded collar united in a gas

tight manner, only at its inner end, to the engine part and the outer end providing upon a radial flange a seat for the spark plug. The method of engine part construction includes reboring the original spark plug hole so that the bushing may be mounted therein, welding only the interior disposed end of the bushing and correcting any distortion of the internal threads in the bushing.

3,683,874

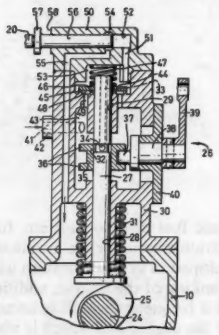
VALVE ACTUATING MEANS

Martin John Berlyn, Beacon Lodge, Texas St., Leeds, LS 27 OHG, England

Filed Sept. 8, 1970, Ser. No. 70,075

Int. Cl. F01l 9/02

U.S. Cl. 123—90.12 **6 Claims**



Hydraulic actuating means for the spring-returned admission valve of a reciprocating expansion motor comprises a plunger pump delivering oil under pressure to a slave cylinder the piston of which is connected to said admission valve, an automatic non-return filling valve for said pump and controllable means for spilling oil displaced by the pump at any desired point in the delivery stroke of the pump plunger thereby determining the period of opening of said admission valve.

3,683,875

ADJUSTABLE VALVE TIMING FOR NO CONTROL

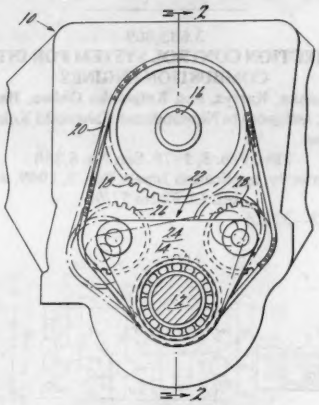
Alexander Chadwick, Farmington, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

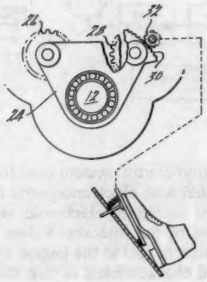
Filed June 18, 1970, Ser. No. 47,395

Int. Cl. F01l 1/34

U.S. Cl. 123—90.15 **2 Claims**

A phase shift mechanism including a plate carrying a pair of oppositely disposed idler sprockets, the plate being pivotally mounted on the crankshaft of an internal combustion engine so that the idler sprockets engage the timing chain at opposite points of its internal periphery and may adjustably control the position of the chain relative to the camshaft and crankshaft by the pivotal movement of the plate on the crankshaft thus





effecting phase shifting between the two shafts and changing valve timing relative to piston position.

3,683,876

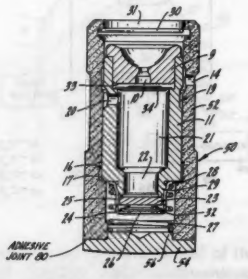
SINTERED METAL TAPPET

Kenneth W. Lesher, Wheaton, Ill., assignor to Stanadyne, Inc., Windsor, Conn.

Filed June 8, 1970, Ser. No. 44,206

Int. Cl. F01l 1/14, 1/24; F01m 9/10

U.S. Cl. 123—90.51 **15 Claims**



A hydraulic tappet in which the barrel is formed of powdered metal, sintered and compacted to a density permitting

fluid from within the barrel to pass to the barrel exterior to provide lubrication therefor. The cam face of the tappet barrel may be a sintered component infiltrated with a hardening agent, or it may be formed by a cast iron disc suitably attached to the barrel. The cam face may also be a separate sintered metal disc, again suitably attached to the tappet barrel.

3,683,877

FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

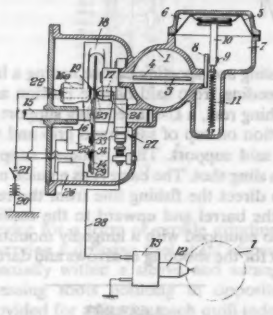
Andre L. Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle de Brevets et Etudes S.I.B.E., Neuilly-sur-Seine, France

Continuation of Ser. No. 883,561, Dec. 9, 1969, abandoned. This application March 26, 1971, Ser. No. 128,512

Claims priority, application France, Dec. 9, 1968, 68177230

Int. Cl. F02d *9/00*

U.S. Cl. 123—97 B **4 Claims**



A fuel feed device for internal combustion engines has a main throttle operated by the driver and an auxiliary throttle which opens automatically and progressively as the air flow rate in the induction pipe increases. A pressurized liquid fuel injection means is located in the pipe downstream of the main throttle and controlled by an electromagnetic valve. A flat, opaque disc containing one or more ports is mounted on a shaft rotated by the engine. The ports pass a light beam between a light source and a photocell mounted on a displaceable common support coupled to the auxiliary throttle. When illuminated the cell energizes the electromagnetic valve. Each port has a spring-urged lever mounted adjacent to it so as to mask or expose part of the port, according to the centrifugal force due to the speed of the disc and hence of the engine. The shape of the port and displacement of the support are arranged so that more light passes, hence more current flows and the fuel flow is reduced or eliminated on deceleration of the engine. The levers are of sheet-metal pivoted between their center of gravity and their masking nose.

3,683,878

APPARATUS FOR PREVENTING ESCAPE OF FUEL VAPOR FROM INTERNAL COMBUSTION ENGINE

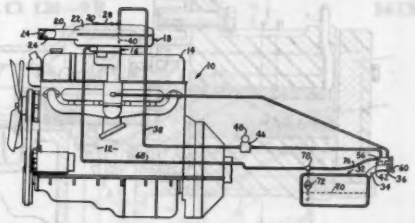
Joe E. Rogers, Waverly, Kans.

Filed Feb. 16, 1971, Ser. No. 115,170

Int. Cl. F02m *59/00*; B65b *3/00*

U.S. Cl. 123—136 **10 Claims**

Apparatus for drawing excess fuel vapors from the carburetor of an internal combustion engine utilizes a conduit having an inlet disposed adjacent the carburetor and an outlet in communication with the fuel tank for the engine. A pump in the conduit is controlled by a pressure sensitive switch which is actuated by the engine ignition system. A second conduit communicates the fuel tank with the carburetor and the pump in the first-mentioned conduit is operated to maintain a sufficient pressure head on the tank to force fuel from the tank through the second conduit and into the carburetor. The suction head created by the engine during the operation can be utilized to withdraw fumes from the tank which would otherwise escape into the atmosphere whenever the cap on the tank is removed from filling purposes. Thus a third conduit is provided in communication with the tank and with the suction head of the engine. In order to keep the engine running while fumes are being evacuated from the fuel tank, a fourth conduit is provided which intercommunicates the first and second conduits to cause fuel contained in the latter to be delivered to the carburetor for combination with air to form a combustion



mixture. Appropriate valve means is operated by a lever which overlies the cap to the fuel tank so that movement of the lever to a position allowing removal of the cap directs the flow of fluid from the first conduit, through the fourth conduit, and into the second conduit while simultaneously opening the third conduit to withdraw fumes from the tank. The invention also encompases a novel delivery nozzle for supplying fuel to the tank from a storage area, which nozzle includes structure for forming an airtight seal with the tank to cause fuel to be drawn through the nozzle in response to the suction head of the engine which is withdrawing fumes from the tank.

3,683,879

FUEL INJECTION PUMPS

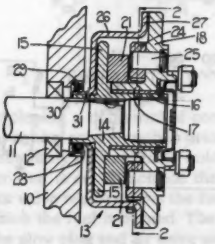
Colin Thomas Timms, 32 Miletree Crescent, Dunstable, Bedfordshire, England

Filed Sept. 29, 1970, Ser. No. 76,510

Claims priority, application Great Britain, Sept. 30, 1969, 47,972/69

Int. Cl. F02m *39/00*

U.S. Cl. 123—139 AP **6 Claims**

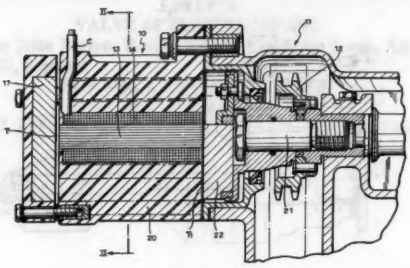


A fuel injection pump which includes a rotary drive shaft and which is driven through a device which enables the timing of injection of fuel to an associated engine to be varied in accordance with the speed at which the pump is driven, the device including a cover which has a cylindrical extension projecting into the body portion of the pump and there being provided intermediate the pump and the extension an oil seal.

3,683,880
MAGNETIC IGNITION DISTRIBUTOR

Mario Palazzetti, Via Fratel Teodoreto 7, and Bruno Cavallarin, Via Principi d'Acaja 40 bis, both of Turin, Italy

Filed Oct. 19, 1970, Ser. No. 82,025
Claims priority, application Italy, Oct. 17, 1969, 53720 A/69
Int. Cl. F02p 3/02, 9/00
U.S. Cl. 123—146.5 A 3 Claims

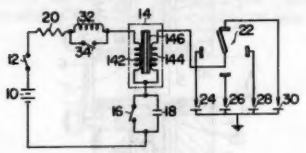


A magnetic ignition distributor for an internal combustion engine comprising a transformer having a primary winding and a number of secondary windings, each secondary winding being connected to a respective spark plug. The secondary windings are arranged around the primary winding and each winding has a magnetic core the ends of which are all flush with each other. A yoke of magnetic material is provided to complete a magnetic circuit between the primary and one of the secondary windings, and this yoke is arranged to be rotatable about the axis of the core of the primary winding so that each secondary core is coupled into the magnetic circuit in turn. The rate at which the yoke rotates being governed by the speed of the engine.

3,683,881
BATTERY POWERED IGNITION CIRCUIT FOR INTERNAL COMBUSTION ENGINES

Mitukuni Tutui, and Hiroshi Watanabe, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1970, Ser. No. 65,187
Claims priority, application Japan, Aug. 22, 1969, 44/66023
Int. Cl. F02p 3/02
U.S. Cl. 123—148 DC 8 Claims

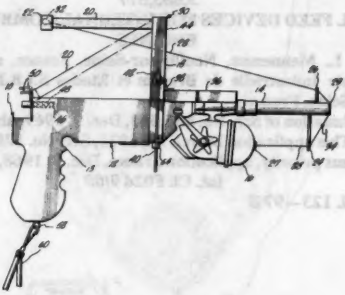


A battery powered ignition circuit for internal combustion engines comprises an additional inductance, whose induced voltage at the instant of ignition of a spark plug in each cylinder is superimposed on the induced voltage of the primary winding of the ignition circuit inductance coil to cause a restrike of the arc between the breaker points to prevent the growth of a projection on the surface of the points of the breaker and, accordingly, to increase the durability thereof.

3,683,882
ELASTIC TYPE DART AND BALL PROJECTING DEVICE

Henry R. Braxton, 3753 Hepburn Ave., Los Angeles, Calif.

Filed Dec. 17, 1970, Ser. No. 99,148
Int. Cl. F41b 7/00, 7/04
U.S. Cl. 124—20 B 8 Claims

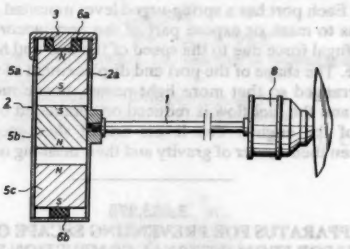


A fishing sling and sporting device having a handle portion, a barrel extending from said handle portion and adapted to receive a fishing reel, a U-shaped sling support fastened in an upright position on top of said hand grip and resilient bands fastened to said support. The U-shaped support and bands function as a sling shot. The barrel has a guide means at its forward end to direct the fishing line from the reel and around the end of the barrel and upward to the resilient band. The device is also equipped with a hingedly mounted arrow guide and dart rest for the shooting of arrows and darts.

3,683,883
STABILIZER FOR ARCHERY BOW

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Feb. 23, 1971, Ser. No. 117,943
Claims priority, application Japan, March 2, 1970, 45/20121; March 2, 1970, 45/20122; Oct. 27, 1970, 45/106038
Int. Cl. F41b 5/00
U.S. Cl. 124—30 R 7 Claims



A stabilizer for an archery bow comprising a rod member and a weight body integrally connected to the free end of the rod member the other end of which is fixed to an archery bow, is further improved in such a manner that the weight body is formed into a non-magnetic outer casing housing a plurality of weight members made of a permanent magnet material so that the weight members can be freely moved inside of the outer casing against magnetic forces caused by the permanent magnet weight members, whereby energy of any vibration or shock, attraction or repression, caused in the archery bow and transmitted to the weight members is consumed within the weight body and the intensity of the vibration or shock is rapidly minimized.

3,683,884

DRESSING DEVICE FOR THE DRESSING OF PROFILE GRINDING WHEELS

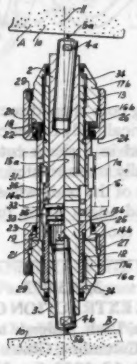
Harry Busch, Waldsachsenerstrasse 32, 8630 Coburg, Bavaria, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg/Bayern, Germany

Filed Nov. 2, 1970, Ser. No. 86,105

Claims priority, application Germany, Nov. 11, 1969, G 69 43 794.1

Int. Cl. B24b *53/12*

U.S. Cl. 125—11 R 6 Claims



Dressing device for a form or profile grinding wheel. Two quills, each carrying a dressing tool at its respective end, are positioned coaxially within a sleeve and arranged with the respective dressing tools pointing in opposite directions. Means are provided for adjusting each quill independently of the other axially but nonrotatably. Each quill comprises a bearing for the other within said sleeve and the whole is arranged for arcuate movement about an axis perpendicular to the grinding wheel axis so that one quill can work on one grinding face of the wheel and thereafter the other quill can work on the other grinding face of the grinding wheel.

3,683,885

DRESSING APPARATUS WITH CUP SHAPED DRESSING WHEELS

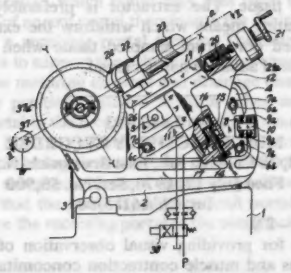
Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Sept. 29, 1970, Ser. No. 76,471

Claims priority, application Japan, Oct. 6, 1969, 44/79801

Int. Cl. B24b *53/14*

U.S. Cl. 125—11 CD 5 Claims



A dressing apparatus for simultaneously dressing two peripheral portions of a grinding wheel includes two cup shaped dressing wheels, each having the end face thereof embedded with diamond particles for respectively dressing each of the peripheral portions of the grinding wheel through movement in a direction parallel to a tangent of the grinding wheel. One end portion of one of the cup shaped dressing wheels is arranged to extend into the bore of the other cup shaped dressing wheel.

3,683,886

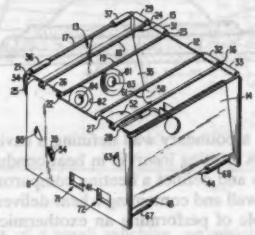
FOLDABLE-PORTABLE STOVE

Irving L. Metzner, Dover, N.J., and Daniel C. O'Connell, Pound Ridge, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,458

Int. Cl. F24c *1/16*

U.S. Cl. 126—9 R 14 Claims



A foldable portable stove comprises sheet metal side, rear and front walls having integral hinge connections to a top grid structure for supporting the article to be cooked and a bottom structure for supporting a source of heat such as canned heat. The top grid structure and the bottom structure are formed lengths of round cross section wire. When the assembly is folded the parts overlie within the peripheral outline of the top grid structure.

3,683,887

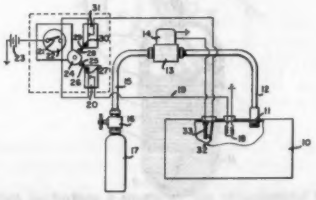
TIMER CONTROLLED VEHICLE HEATER

Emery J. Sammut, 50 Decorah Lane, Campbell, Calif.

Filed April 2, 1971, Ser. No. 130,575

Int. Cl. F23n *5/00*

U.S. Cl. 126—116 A 3 Claims



Apparatus employing a container of compressed fuel such as propane for warming an automobile prior to the occupant's use thereof, particularly on extremely cold days. This device employs a timer that is set to actuate the energization of a glow plug and air valve which allows the fuel to enter the heat exchanger in which the fuel is burned. The timer controls the device so that the glow plug and air valve are turned off after a predetermined time of operation. The timer may also be set to keep the heating cycle on until the occupant of the vehicle turns it off.

3,683,888

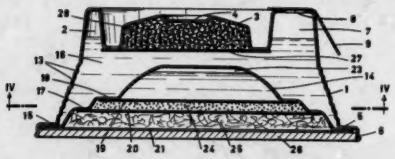
Patent Not Issued For This Number

3,683,889

HEATING CONTAINER

Viktoria Hoffman, Maurus Gordon-Strasse 12, Garsten, Austria

Filed Sept. 2, 1970, Ser. No. 68,871
Claims priority, application Austria, Sept. 16, 1969, A 8751/69
Int. Cl. F24j 1/00
U.S. Cl. 126—263 37 Claims



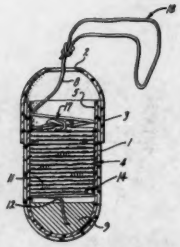
A vessel has a boundary wall defining a cavity which contains a liquid. A heating insert is in heat-conducting relation with said cavity and defines a heating compartment adjoining said boundary wall and containing a heat-delivering substance which is capable of performing an exothermic reaction. An outer drinking container contains said vessel and insert. Said outer container and vessel consist of a sufficiently heat-resisting material, which consists at least in part of plastics material.

3,683,890

CARRIER SYSTEM FOR DELIVERY OF AN END OF AN ELONGATED MEMBER TO THE UPPER GASTROINTESTINAL TRACT

Charles B. Beal, 1875 Oakdell Dr., Menlo, Calif.

Continuation-in-part of Ser. No. 771,573, Oct. 29, 1968, abandoned. This application Oct. 2, 1970, Ser. No. 77,574
Int. Cl. A61b 10/00
U.S. Cl. 128—2 W 8 Claims



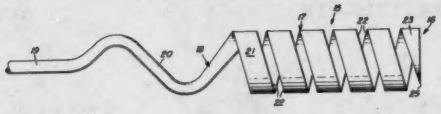
A two stage device for delivering an elongated member to the upper gastrointestinal tract consisting of an outer gelatin pharmaceutical capsule which dissolves in the stomach, an inner open ended capsule contained in said outer capsule and being nonsoluble in the gastro-intestinal tract and having walls inwardly deflectable under peristaltic action of the upper gastro-intestinal tract in the absence of the outer capsule and carrying a weight and a portion of the elongated member. The device being used to deliver cord or tubing at least as far as the duodenum where the carrier separates from the elongated member and passes harmlessly out with the stool. The elongated member as a tube carries medicines, other liquids or gas to the duodenum, and as a yarn is retrieved and examined for diagnosing infection, parasites and other disorders.

3,683,891

TISSUE AUGER

Marshall Eskridge, and James K. V. Willson, both of Mobile Infirmary P.O. Box 7544, Mobile, Ala.

Filed June 26, 1970, Ser. No. 50,182
Int. Cl. A61b 10/00
U.S. Cl. 128—2 B 5 Claims



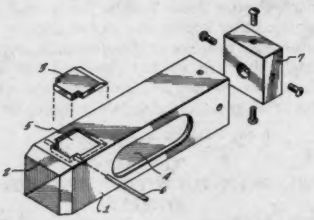
A tool for removing core shaped sections from living tissue is formed by a cylindrical body of helically wound wire which terminated at one end in a sharp cutter which pierces and severs the tissue initially when rotated, the core being formed by the following turns of the body whose turns are spaced and provided with serrated edges which further retain the tissue within the body of the tool.

3,683,892

DEVICE FOR THE EXTRACTION OF CORE SAMPLES

Roy M. Harris, Logan, Utah, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed July 13, 1970, Ser. No. 54,463
Int. Cl. A61b 10/00, 17/32
U.S. Cl. 128—2 B 6 Claims



Described herein is a device useful for extraction of core samples from, e.g., muscle tissue of live animals and carcasses. The device is comprised of an extractor body sharpened at one end and hollow to receive a core cut by the sharpened end as it advances into sampled tissue, the forward end of the body being provided with a blade inwardly pivotally responsive to, e.g., muscle tissue backflow to sever the base of the core from surrounding tissue. The extractor is preferably affixed to thrust-generating means which withdraw the extractor body and contained core from sampled tissue when a predetermined degree of advance has occurred.

3,683,893

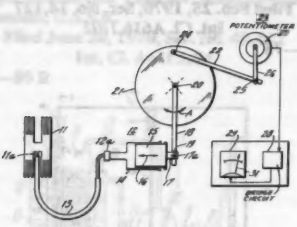
MUSCLE ACTIVITY RECORDER

Robert Fried, 28 Colburn Rd., East Brunswick, N.J.

Filed July 17, 1970, Ser. No. 55,900
Int. Cl. A61l 5/00
U.S. Cl. 128—2 S 4 Claims

A system for providing visual observation of changes in muscle tonus and muscle contraction concomitant with self-initiated changes in muscular activity, especially in applications where kinesthetic sensation is deficient. Muscular activity is sensed by compressible means which provides a signal in the form of an air flow of appropriate positive or negative

pressure values which, in turn, is converted into an electrical signal which is ultimately transformed into a visually observa-



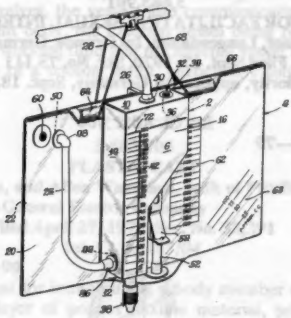
ble meter reading for enhancing kinesthetic-somesthetic perception and for enhancing the subject's control over the musculature of interest.

3,683,894

URINE METER AND DRAINAGE RECEPTACLES

Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Sept. 21, 1970, Ser. No. 74,037
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 F **13 Claims**



A combination urine meter and drainage receptacle wherein the urine metering element and the drainage receptacle element may be separately drainable of liquid contained therein. The interiors of the metering element and the drainage receptacle element communicate with each other by a conduit through which liquid may pass from the metering element out of an exit portal therein into the drainage receptacle through a receiving portal therein. The combination includes means to support the urine metering element and maintain the urine metering element and drainage element in relatively stable positions relative to each other such that the receiving portal in the receptacle element is normally above or at the same level as the exit portal in the metering element. Fluid in the metering element of this combination can be emptied into the receptacle element simply by positioning said elements such that the metering element exit portal is properly located above the receiving portal of the receptacle element.

3,683,895

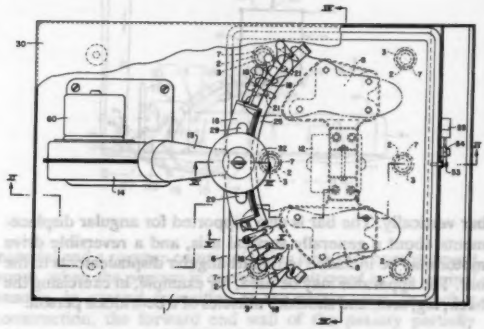
Patent Not Issued For This Number

3,683,896

VIBRATING FOOT DRYING AND TREATING APPARATUS

Edward D. Peplin, Brookpark, Ohio, assignor to Lakewood Manufacturing Co., Westlake, Ohio

Filed April 19, 1971, Ser. No. 135,195
Int. Cl. A61h *21/00*
U.S. Cl. 128—24.2 **12 Claims**



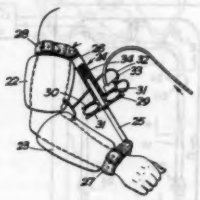
The footrest of a small machine, on which a person can stand, is provided with means for spreading the toes apart. There also are means for blowing drying air and foot-treating between the spread toes. Additional means vibrate the feet during the drying and treating operation.

3,683,897

APPARATUS FOR MOVING OR ACTIVATING PARTS OF THE BODY

Walter Shield; Michael John Saggers, and James Calnan, all of London, England, assignors to Flowtron Aire Limited, London, England

Filed Aug. 28, 1970, Ser. No. 67,758
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **7 Claims**



Apparatus including a member for attachment to a part of the body which member is capable of activating the part of the body cyclically. The member may comprise one or more double flexible sleeves alternatively or additionally it may comprise a mechanical linkage connected to a part of the body which includes linkage deforming means to cyclically deform the linkage and move the part of the body.

3,683,898

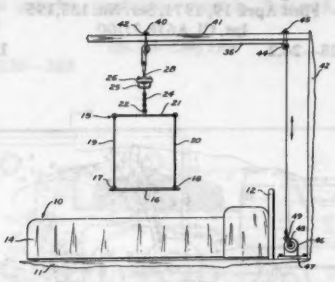
THERAPEUTIC APPARATUS

Timothy J. Underwood, Las Vegas, Nev., assignor to Humphrey Elevator and Truck Company, Faribault, Minn.

Filed Oct. 26, 1970, Ser. No. 83,702
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **7 Claims**

Therapeutic apparatus to aid certain disabled and bedridden persons to participate in physical activities otherwise

prevented because of their infirmities. In one embodiment of the invention, the apparatus includes an exercise bar supported above a bed by a block and tackle assembly connected with motor means operative therethrough to reciprocate the



bar vertically. The bar is also supported for angular displacements about a generally vertical axis, and a reversible drive motor may be included to impart angular displacements to the bar. The apparatus may be used, for example, in exercising the back, leg, arm, and shoulder muscles of a bedridden person.

ERRATUM

For Class 128—30.2 see:
Patent No. 3,683,655

3,683,899

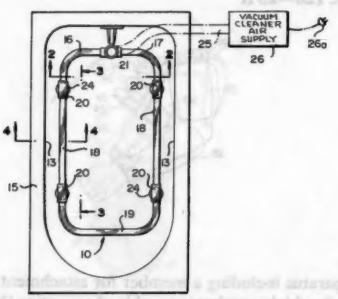
WATER MASSAGE AERATOR APPARATUS

Joseph A. La Barber, Kern City, Calif., assignor to Henry Weiland, Hacienda Heights, Calif.

Continuation-in-part of Ser. No. 658,816, Aug. 7, 1967, Pat. No. 3,533,404. This application Sept. 1, 1970, Ser. No. 68,741

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **15 Claims**



A water massage aerator bath apparatus for injecting air under pressure into water. The apparatus includes an elongated tubing passage that is shaped for positioning in a bath container and includes holes spaced longitudinally along the tubing passage. A nozzle is connected to the tubing passage to conduct air under pressure to the tubing passage and through the spaced holes. The tubing passage comprises a plurality of tube sections and means to easily connect and disassemble the separate tube sections. The tube sections have a structural configuration to provide orientation and alignment of the spaced holes to inject air under pressure to the interior of the bath container each time the apparatus is assembled. Securing means such as suction cups are connected to the tubing passage for attaching the apparatus to the inner surface of the bath container.

3,683,900

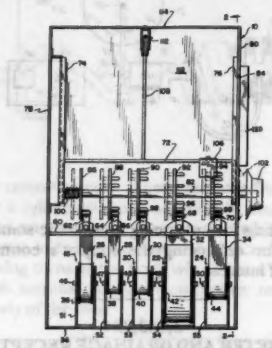
MEDICAL TRACTION DEVICE

Samuel P. Alessi, Homewood, and David A. Daneck, Chicago Heights, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 25, 1970, Ser. No. 14,127

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **1 Claim**



A medical traction device incorporates a plurality of constant force spring means and means for selecting a Yasko; J. traction force from said spring means for applying to a patient.

3,683,901

DEVICE FOR FACILITATING SEXUAL INTERCOURSE

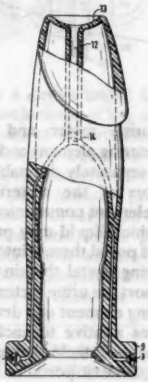
Henry Wegener, Langendamm, Im Grunde, Germany

Filed Sept. 17, 1970, Ser. No. 73,111

Claims priority, application Germany, Sept. 18, 1969, P 19 47 301.9

Int. Cl. A61f *5/00*

U.S. Cl. 128—79 **15 Claims**

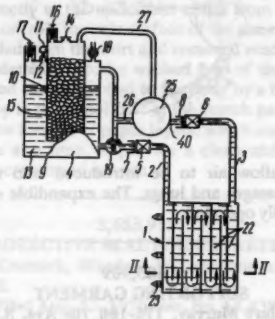


A male device for facilitating sexual intercourse of elastic material comprising a check valve allowing fluid flow only out of an interior space in the device. The device may also serve as a male contraceptive.

3,683,902
MEDICAL SPLINT APPARATUS

Anatoly Ivanovich Artemenko, ulitsa Levitskogo, 5, kv. 8; Rafail Yakovlevich Gershtenkern, ulitsa Artema, 163, kv. 28, and Igor Nikolaevich Yagupov, ulitsa Levitskogo, 7, kv. 1, all of Donetsk, U.S.S.R.

Filed June 24, 1970, Ser. No. 49,447
Int. Cl. A61f 5/04
U.S. Cl. 128—89 R 5 Claims



A medical splint apparatus, useful for treatment of crush syndromes, an inflatable splint body adapted to be inflated by a working fluid received thereinside, and a heat exchange structure including an external vessel and an internal vessel received inside the external vessel, the vessels communicating with each other and being provided with respective fluid pressure control valves, the vessels also communicating with the inflatable splint body, the external vessel being filled with a supply of the working fluid and the internal vessel being filled with a supply of a cooling agent, particularly solid carbonic acid.

3,683,903
PLASTIC CAST

Daniel W. Fox, and Allen Wambach, both of Pittsfield, Mass., assignors to General Electric Company

Filed April 27, 1970, Ser. No. 32,391
Int. Cl. A61f 5/04
U.S. Cl. 128—90 5 Claims

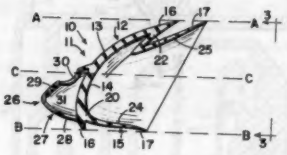
A plastic cast for immobilizing a body member which cast comprises a layer of porous flexible material, preferably a glass fabric, impregnated with a solution of a thermoplastic resin, preferably a polycarbonate in a suitable solvent such as methylene chloride. The cast material may be stored in a rolled tape form in an hermetically sealed container having a sufficient solvent environment to maintain the same in a plasticized state and, in use, is wrapped about the body member in one or more layers over a moisture resistant cushioning layer. When the solvent evaporates the resin becomes sufficently rigid within a short time, usually less than fifteen minutes, to immobilize the member and the rigid cast ultimately becomes completely hardened, usually within less than two hours. The cast is relatively light in weight, mechanically strong, and highly resistant to moisture, and remains hygienic during use so that much less discomfort to the wearer results than from the use of conventional plaster of paris casts.

3,683,904
PESSARIES

Howard B. Forster, 35 Thorncliffe Park Dr., Toronto, Ontario, Canada

Filed Oct. 5, 1970, Ser. No. 77,895
Int. Cl. A61f 5/46
U.S. Cl. 128—127 5 Claims

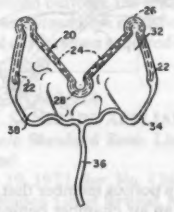
A pessary intended for insertion in the vaginal passage of a human female is formed with a resiliently flexible forward end wall which effectively closes the vaginal passage anteriorly of the cervix uteri so as to restrict movement of spermatozoa thereto. A projection is formed on the forward surface of the forward end wall of the pessary for disposition in the posterior fornix of the vaginal passage and abutment with the cervix uteri to stabilize the pessary against angular displacement during coitus. The forward projection is usefully formed with an internal compartment for containing a spermicidal fluid material and a passage communicating with that compartment opens, when the pessary is correctly positioned in the vaginal passage, in general apposition to the cervix uteri. In such a construction, the forward end wall of the pessary partially defines the compartment so that, during coitus, flexure of the forward end wall causes discharge of the spermicidal fluid material from the compartment about the cervix uteri, so further reducing the risk of live sperm reaching the uterus.



3,683,905
INTRA-UTERINE CONTRACEPTIVE DEVICES

Marc E. Chaft, 8 Tripplet Rd., Somerset, N.J.

Filed March 16, 1970, Ser. No. 19,963
Int. Cl. A61f 5/16
U.S. Cl. 128—130 14 Claims



An intra-uterine contraceptive device comprising a longitudinally rigid, transversely resiliently compressible body having each of its longitudinal ends expansible upon compression of the other; means limiting the expansion of one of its ends formed of a resiliently pliable material molded on said body at said end and along its side edges; the resiliently pliable material projecting beyond said body at said end to provide a compressible, longitudinally deformable extension of said body. The limiting means and the extension include a diaphragm across the width of the body; the diaphragm defined by thickened ribs along its free edge portions.

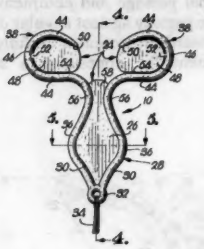
3,683,906
SHIELDED INTRAUTERINE DEVICE

Ralph R. Robinson, P.O. Box 668, Middlesboro, Ky.

Filed Aug. 28, 1970, Ser. No. 67,885
Int. Cl. A61f 5/46
U.S. Cl. 128—130 5 Claims

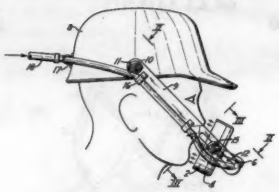
Opposed members of a collapsible intrauterine contraceptive device have stretches of membranous material extending

therebetween which lie flatly between the normally front and rear walls of the uterus to increase the total surface area of the



device contacting such walls, thereby presenting a generally flat, planar device which resists embedment within the tissues of the walls.

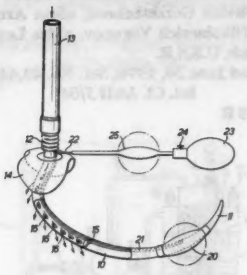
3,683,907
FRESH AIR RESPIRATOR
Harry N. Cotabish, Allison Park, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed July 20, 1970, Ser. No. 56,413
Int. Cl. A61m *16/00*
U.S. Cl. 128—145 **4 Claims**



A cup contains a porous member that is spaced from its bottom wall to form an air chamber behind the porous member. The cup has an opening communicating with the chamber and there is means for supporting the cup in front of a person's nose and mouth with the porous member facing them. A stream of air is conducted to the cup opening to maintain the chamber full of air under pressure so that air will diffuse through the porous member and issue therefrom to provide fresh air around the nose and mouth.

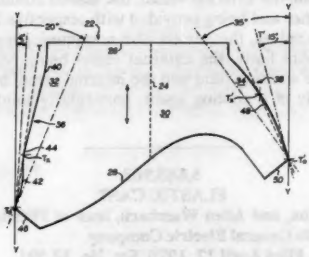
3,683,908
APPARATUS FOR SEALING THE OESOPHAGUS AND PROVIDING ARTIFICIAL RESPIRATION
Tantrimudalige Anthony Don Michael, SQ. 1044, and Edward Henry Lambert, SQ. 1697, both of Abadan, Iran
Filed Oct. 20, 1969, Ser. No. 867,697
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.7 **13 Claims**

Apparatus for use in artificial respiration comprising an elongated member designed to be inserted into the oesophagus and having an expandable inflatable element which can be operated externally after insertion in order to close the oesophagus to prevent inflation or aspiration of the stomach. The apparatus preferably includes a tubular airway in combination with the elongated member, with discharge



openings to allow air to be introduced into the patient's respiratory passages and lungs. The expandible element may be mechanically operated.

3,683,909
SUPPORTING GARMENT
Richard De Hart Murray, 176-180 7th Ave. S., New York, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,450
Int. Cl. A61f *5/40*
U.S. Cl. 128—159 **7 Claims**



An undergarment formed of knitted fabric comprising a plurality of members cut to pattern and adapted to be sewn together to provide positive support and lift for the male genital organs.

3,683,910
ABSORBENT CROTCH PAD
Walter J. McKenna, 89-01 27th St., Bellerose, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,099
Int. Cl. A61f *5/40*
U.S. Cl. 128—159 **1 Claim**

An absorbent crotch pad has been provided, which can be applied to the crotch area of the body from its attachment with the front of an undershirt, or with a sanitary belt. The

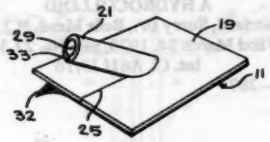
crotch pad comprises absorbent layer or layers, which may be attached to the front of an undershirt and about an opening in the lower regions of the undershirt and adjacent to the lower hem thereof, and through which the genital organs can be extended and the absorbent pad material adapted to lie thereunder and the pad being shaped to conform to the crotch area, in order to soak up and absorb excess moisture and keep the area free from discomfort. The underpants or trunks will be extended upwardly over the genital organs and the lower regions of the undershirt. The crotch pad can be provided with fastening means either in the form of snap fasteners for attachment directly to the undershirt either from the front surface thereof, or from the rear surface of the same, and adapted to be suspended from the shirt and removed readily therefrom when the undershirt is to be washed free of the crotch pad. The crotch pad can be applied to the body by a belt extending through a loop in the upper part of the crotch pad. The crotch pad also can be formed of paper layers, which can be removed after use, one at a time, to provide a clean and new surface each time the crotch pad is worn.

3,683,911

PROTECTIVE SEAL FOR CATHETER

James B. McCormick, Hinsdale, Ill., assignor to Pelam, Inc., Hinsdale, Ill.

Filed Aug. 13, 1970, Ser. No. 63,438
Int. Cl. A61m *25/02*
U.S. Cl. 128—214 R **7 Claims**



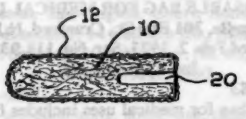
A device for providing a protective seal at an incision provided incident to the insertion of a catheter beneath the skin includes a shield having an adhesive coating on one surface so that the shield adheres to the skin in the area of the incision to prevent bacteria from passing beneath the shield. A tubular sleeve extends outwardly from and is sealed to the shield to define a passageway for the catheter, the sleeve having an inner adhesive coating to provide a seal between the sleeve and catheter so as to prevent bacteria from gaining access to the incision.

3,683,912

ABSORBENT TAMPON

Virginia A. Olson, and Bruce A. Townsend, both of Oshkosh, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 708,575, Feb. 27, 1968, abandoned. This application April 28, 1970, Ser. No. 29,776
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **8 Claims**



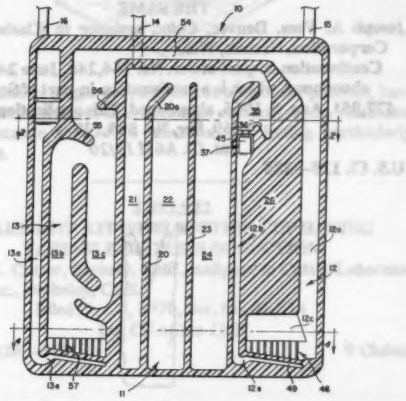
An absorbent tampon having a fluid pervious layer of polypropylene fibers disposed on its outer surface. Insertion force for such tampons is reduced more than 50 percent when compared with the insertion force required for conventional tampons.

3,683,913

UNDERWATER DRAINAGE APPARATUS WITH AIR FLOW METERS

Leonard Kurtz, Woodmere; Robert Bidwell, Melville; Sidney Mishkin, Great Neck, and Edward Hallstein, Smithtown, all of N.Y., assignors to Deknatel Inc., Queens Village, Long Island, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,129
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **21 Claims**



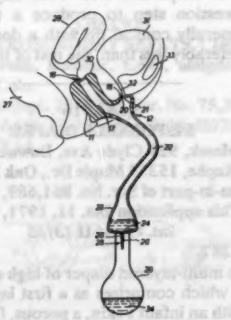
An underwater drainage apparatus is provided for evacuating fluids from body cavities and comprises an integrally formed collection chamber, underwater seal chamber and a pressure regulating manometer chamber. Air flow meters are provided in the underwater seal chamber and the pressure regulating chamber for measuring the flow of gasses there through. A valve is provided between the underwater seal and the collection chamber to permit high negative pressures to be developed in the pleural cavity when required by the patient.

3,683,914

PERSONAL SANITARY APPLIANCE

Ivan Patrick Crowley, c/o Standard Bank Limited, 117 Park Lane, London, England

Filed March 19, 1971, Ser. No. 126,070
Claims priority, application Great Britain, March 20, 1970, 13703/70
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **5 Claims**



A personal sanitary device for use in incontinent females comprises a vaginal portion for insertion in the vagina and

provided with an opening for receiving secretion from the uterus and a vestibular portion provided with an opening for receiving fluid from the urethra, the openings communicating with passage means provided with a one way valve which is adapted such that the passage of fluid from the openings therethrough will maintain a subatmospheric pressure in the device which pressure causes the device to be sealingly engaged with the wearer.

3,683,915

CATAMENIAL DEVICES AND METHODS OF MAKING THE SAME

Joseph A. Voss, Denver, Colo., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 744,248, June 24, 1968, abandoned, which is a continuation-in-part of Ser. No. 477,851, Aug. 6, 1965, abandoned. This application Dec. 15, 1969, Ser. No. 885,138

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **9 Claims**

A catamenial tampon is disclosed having rapid initial and high total moisture absorptivities. The tampon is generally cylindrical and has a blunt forward end provided with a forwardly facing, diverging cavity for physically trapping and pooling menstrual fluid. The cavity, which may be in the form of a V-shaped notch, has a width across the forward extremity at least about one quarter of the overall diameter of the tampon. The portions of the tampon defining the cavity are flexible and resilient so that they may be pressed toward one another to facilitate insertion and removal of the tampon. Further, these portions expand forwardly and outwardly during menstrual fluid absorption thereby exposing more internal surface area of the tampon to enhance further absorption of fluid and block egress of the trapped fluid.

Methods for making the foregoing catamenial tampon are also disclosed. Generally, the tampon is made by providing a strip of tampon material with a forwardly diverging cavity in the forward end. This may be accomplished by moving a continuous web of cotton material past a cutter device which separates the web into strips having an initial shape and size. Each individual strip is then compressed both radially and longitudinally into a generally cylindrical configuration having the desired final shape and size. This may be followed by another compression step to produce a tampon having a rounded or generally conical tip with a density substantially equal to, or preferably less than, the rest of the tampon.

3,683,916

DISPOSABLE DIAPER

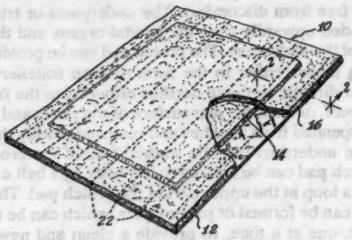
Frederick K. Mesek, 929 Clyde Ave, Downers Grove, Ill., and Virginia L. Rapke, 15333 Maple Dr., Oak Forest, Ill.

Continuation-in-part of Ser. No. 861,689, Sept. 29, 1969, abandoned. This application Jan. 11, 1971, Ser. No. 105,195

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **24 Claims**

A disposable multi-layered diaper of high absorptive capacity is provided which comprises as a first layer to be brought into contact with an infant's skin, a porous, fibrous non-woven bonded facing web of controlled wettability made of mixed long and short fibers. A second layer in juxtaposition to the facing layer, is a highly porous batt of short cellulosic fibers which are loosely compacted throughout the thickness of the batt, to provide a layer which has greater wettability that that of the facing web. The outermost backing layer of the diaper is an impervious sheet directly adhered to its adjacent layer, which may be the second layer, over a widely distributed area



of adhesion. In some embodiments of the invention there may be provided one or more layers between the highly porous batt and the impervious backing sheet, for example, an additional highly porous batt or a plurality of sheets of creped cellulose wadding.

3,683,917

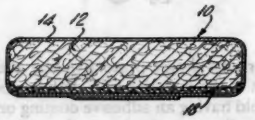
ABSORBENT PRODUCT COMPRISING A FLUID IMPERVIOUS BARRIER OF A REPELLENT TISSUE AND A HYDROCOLLOID

John M. Comerford, Surry Dr., Belle Mead, N.J.

Filed March 24, 1970, Ser. No. 22,312

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **9 Claims**



An absorbent product for absorbing and retaining body fluids and exudates comprising a cellulosic absorbent body or core, a cellulosic covering or facing material, and a biodegradable, water impervious barrier sheet or layer comprising a cellulosic tissue having a basis weight of from about 6 pounds to about 30 pounds, a water repellent material deposited on the cellulosic tissue in an amount equal to from about 0.1 percent by weight to about 0.5 percent by weight, based on the weight of the treated tissue, whereby the cellulosic tissue is classified as a repellent tissue, and from about 0.002 to about 0.03 gram per square inch of a hydrocolloidal material on the repellent tissue, said hydrocolloidal material being capable of swelling in body fluids and exudates and cooperating with the repellent tissue to form an impervious barrier to body fluids and exudates.

3,683,918

DISPOSABLE BAG FOR MEDICAL USES

Raymond R. Pizzella, 301 Elm St., Cranford, N.J.

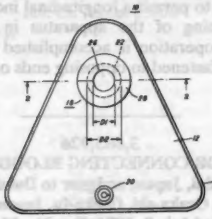
Filed Feb. 2, 1971, Ser. No. 111,938

Int. Cl. A61f *5/44*

U.S. Cl. 128—283 **8 Claims**

A disposable bag for medical uses includes front and back plastic sheets edge-sealed together. The front sheet has a circular opening and a double-sided adhesive annular disc, with a peelable covering, concentrically disposed about the opening. The diameter of the annulus is smaller than that of the opening in the front sheet so that, in a smaller annular area about the opening, the front and back sheets stick to one another,

thereby maintaining a sanitary interior prior to use and, when the bag is not completely filled, enabling the opening to be



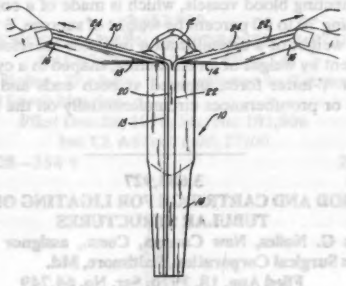
closed after use. In one embodiment the bag is also provided with a valve to drain the collected contents or to permit the escape of trapped gases.

3,683,919

FLUSHABLE SANITARY NAPKIN

Myron B. Ells, 1624 Southbrook Dr., Somerville, N.J.

Filed Jan. 15, 1970, Ser. No. 3,415
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 W 6 Claims



A flushable sanitary napkin having a conventional high wet-strength, non-woven cover but which can readily be torn longitudinally into two substantially equal portions to release the absorbent core from the encasing cover thereby permitting flushing away of the core and the cover separately in a conventional water closet.

3,683,920

Patent Not Issued For This Number

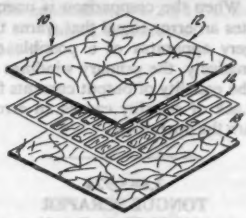
3,683,921

ABSORBENT SPONGES

Berry A. Brooks, 284 English Court, Somerville, N.J., and Norman R. Eisdorfer, 14 Colburn Rd., East Brunswick, N.J.

Filed Aug. 17, 1970, Ser. No. 64,455
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 5 Claims

A bonded, self-sustaining, single-use, disposable absorbent product having excellent softness and excellent strength, bulk, reailience and resistance to surface abrasion and linting, particularly when wet, comprising a plurality of layers of reinforced nonwoven textile fabrics, each of said layers comprising a synthetic polymeric thermoplastic reinforcing reticulate grid netting covered on each side by at least one layer of overlapping, intersecting fibers mechanically intertwined around and bonded to the individual elements of said grid netting, said plurality of layers of reinforced nonwoven textile fabrics being secured together at their peripheral edges to form a bonded,



self-sustaining, single-use, disposable absorbent product, having excellent softness and excellent strength, bulk, resilience and resistance to surface abrasion and linting particularly when wet.

3,683,922

SNAKE-BITE KIT WITH SUCTION CUP HAVING VARIABLE DEGREES OF SUCTION

Robert K. Cutter, Berkely, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Nov. 4, 1970, Ser. No. 86,854
Int. Cl. A61m *1/00*
U.S. Cl. 128—300 9 Claims

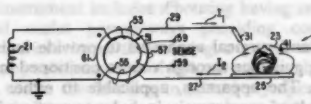
A snake-bite kit providing greater variation in the degree of suction available for removing venom from a snake bite. A pair of telescopically disposed compressible resilient tubular members with opposite closed ends contains the remainder of the kit. Both of these members have a flattened oval-cross section, and they are relatively small, so that the assembly is easily carried in the pocket. Their flat long front and rear walls are joined by short arcuate side walls; the distance along the major axis enables the spanning of fang marks of a larger snake. Pressure applied along the short axis produces a gentler suction than does pressure applied along the long axis. Pressure may be applied along the short axis by a person with weaker fingers than can apply operative pressure to a bulb having a circular annular cross section.

3,683,923

ELECTROSURGERY SAFETY CIRCUIT

Robert K. Anderson, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

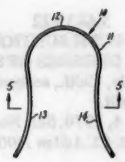
Filed Sept. 25, 1970, Ser. No. 75,358
Int. Cl. A61b *17/36*; A61m *3/00*; H02h *1/02*
U.S. Cl. 128—303.14 10 Claims



A safety circuit suitable for use in electrosurgery apparatus to prevent electrical burns is described herein. A current

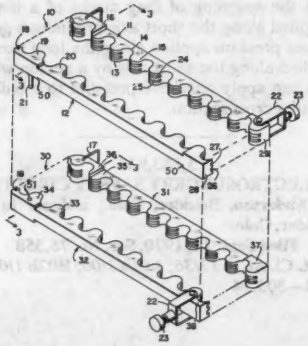
sensing transformer having a pair of primary windings and a single secondary or sense winding is provided. The primary windings are connected so as to compare the input current applied to an active electrode with the output current from an indifferent plate. When the comparison is unequal, the sense winding generates an error signal that warns the operator of the electrosurgery apparatus of a possible electrical burn situation. Alternatively, the primary windings are connected so as to sense the equality of output currents from two indifferent plates. Lack of equality causes an error signal to be generated to warn the operator.

3,683,924
TONGUE SCRAPER
Lawrence D. Louie, 1612 McKinley Rd., Napa, Calif.
Filed July 14, 1970, Ser. No. 54,754
Int. Cl. A61b 17/24
U.S. Cl. 128—304 **3 Claims**



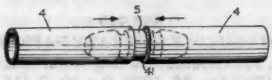
A tongue scraper for the practice of cleaning the tongue by a scraping action consisting of a flexible ribbon formed of stainless steel or fiberglas and having a generally U-shape with the opposite legs of the U curving outwardly toward their free ends. The ribbon has a spring action to assist in grasping with the fingers. The bight of the U engages the tongue to perform the scraping action.

3,683,925
METHOD AND APPARATUS FOR ANASTOMOSING AND INCISING
Leon A. Frankel, 191 Presidential Blvd., Bala Cynwyd, Pa.
Filed Sept. 4, 1970, Ser. No. 69,730
Int. Cl. A61b 17/11
U.S. Cl. 128—334 C **15 Claims**



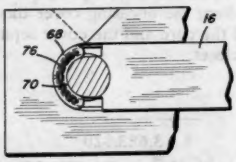
A method and surgical apparatus to provide incision and anastomosing guidance through viscera positioned in side-by-side relation. The apparatus, applicable to either open or closed methods of anastomosis, includes two pairs of longitudinally extending and horizontally engageable members. The paired members are in vertically displaced contact and engage the viscera on opposing surfaces whereupon the thin walled membranes are forced into an undulating path forming folds in a longitudinal path. The apparatus provides passages through which a double layer of sutures may be passed repeatedly intersecting opposing visceral folds. A guide path is formed in a longitudinal direction between the contacting paired members to permit a longitudinal incision through the viscera. Positioning of the apparatus in a fixed relation throughout the operation is accomplished by fixed and adjustable clamps fastened to opposing ends of the paired members.

3,683,926
TUBE FOR CONNECTING BLOOD VESSELS
Jiro Suzuki, Sendai, Japan, assignor to Dainippon Pharmaceutical Co., Ltd., Osaka-shi, Osaka-fu, Japan
Filed July 9, 1970, Ser. No. 53,454
Int. Cl. A61b 17/11
U.S. Cl. 128—334 R **10 Claims**



A tube readily soluble into blood and useful as the support for connecting blood vessels, which is made of a composition comprising 70 to 90 percent by weight of sucrose, 6 to 25 percent by weight of a crystallization inhibitor therefor and 2 to 10 percent by weight of an elasticizer, shaped in a cylinder, T-letter or Y-letter form, tapered at both ends and provided grooves or protuberances circumferentially on the outer surface.

3,683,927
METHOD AND CARTRIDGE FOR LIGATING ORGANIC TUBULAR STRUCTURES
Douglas G. Nolles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Aug. 18, 1970, Ser. No. 64,749
Int. Cl. A61b 17/10, 17/12
U.S. Cl. 128—334 R **14 Claims**



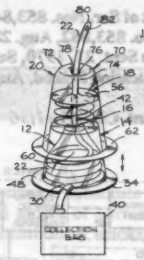
A method and a staple cartridge for ligating a hollow organic tubular structure by means of surgical staples. The organic tubular structure is loosely confined within an area which is variable in accordance with the position of the ligating surgical staples. The staples, being U-shaped are moved toward the organic tubular structure, thereby decreasing the confining area, until the arms of the staples begin to bend around the structure. The staple arms are bent until they encircle the tubular structure and contact one another; then the staples are further deformed, by acting on the surfaces remote from the contacting arms, until the tubular structure is completely sealed. During the staple-bending operation, the periphery of the tubular structure is positively controlled by the ligating cartridge, thereby ensuring the integrity of the structure.

3,683,928

URETHRAL CATHETER APPLICATOR

David H. Kuntz, 6027 Haim St., Los Angeles, Calif.

Filed March 25, 1970, Ser. No. 22,550
Int. Cl. A61m 25/00
U.S. Cl. 128—349 R 13 Claims



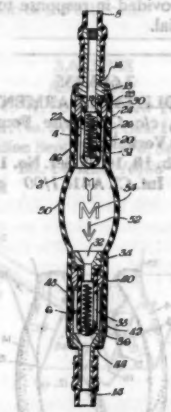
An improved urethral catheter applicator includes a catheter storage cartridge, means for lubricating and unidirectionally advancing a tubular urethral catheter through and from the device while the device is held and manipulated in one hand, and a specially shaped nose portion for accurately positioning the device adjacent the urethra.

3,683,929

DEVICE FOR DRAINING CEREBROSPINAL FLUID IN CASES OF HYDROCEPHALUS

John W. Holter, St. John, V.I., assignor to Extracorporeal Medical Specialties, Inc.

Filed Dec. 28, 1970, Ser. No. 101,906
Int. Cl. A61m 01/00, 27/00
U.S. Cl. 128—350 V 2 Claims



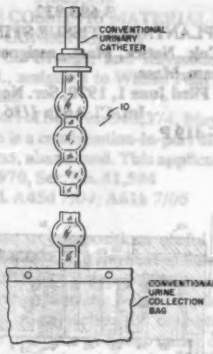
A device for the draining of cerebrospinal fluid (CSF) in cases of hydrocephalus, of the type having upstream and downstream normally closed check valves which are designed to pass CSF in one direction only in response to predetermined values of fluid pressure, and having a pumping chamber between the valves for manipulation to insure that the device is functioning properly, the pumping chamber having an enlarged bulbous portion with a lateral dimension substantially greater than the diameter of the remainder of the device, the enlarged bulbous portion being molded to shape from medical grade silicone rubber, and having flow direction or other indicia molded thereon.

3,683,930

SURGICAL DRAINAGE TUBE

Daniel M. McWhorter, 432 Phelps, Arlington Heights, Ill.

Continuation-in-part of Ser. No. 758,423, Sept. 9, 1968, abandoned. This application Oct. 28, 1970, Ser. No. 84,658
Int. Cl. A61m 25/00
U.S. Cl. 128—349 R 3 Claims



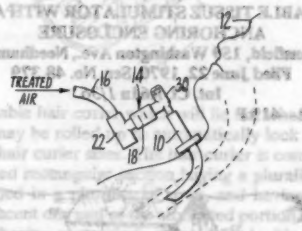
In catheterization procedures using drainage tubing of uniform bore, the drainage of fluid is often in the form of a solid column of fluid which creates a vacuum in its wake, resulting in lesions in the bladder wall where wall tissue is drawn into the catheter drainage eyelet. This vacuum is greatly reduced if the drainage tube is provided with alternate zones of wide and narrow inside diameter wherein the wide zones are above the critical diameter which will support an unbroken column of fluid.

3,683,931

TRACHEAL INSTRUMENT

Kenneth M. Chelucci, and Freddy E. Thomas, both of Livermore, Calif., assignors to Paramedical Specialties, Livermore, Calif.

Filed April 16, 1970, Ser. No. 29,078
Int. Cl. A61m 25/00
U.S. Cl. 128—351 3 Claims



A tracheal instrument adapted for connection to a tracheotomy tube to control the ingress and egress of air by the patient with which the tracheotomy tube is associated. The tracheal instrument includes a housing having an interior and inlet and outlet passageways providing communication between the interior of the housing, a source of air, and the tracheotomy tube, respectively. A moveable valve element is disposed within the housing to selectively open or close at least one of said passageways in accordance with the ingress or egress of air by the patient. Due to the action of a biasing member connected thereto the valve element operates to permit ingress of air to the patient through the tracheal instrument while preventing egress of air therethrough. In this

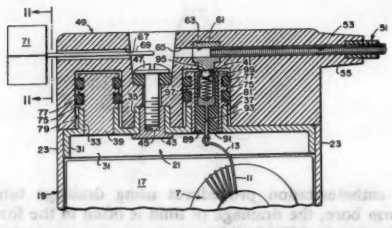
manner the patient output air passes through his vocal cord area to enable him to speak at will. The instrument further comprises conduit means open to the interior of the tracheotomy tube which permits direct access by instruments to the tube.

3,683,932

IMPLANTABLE TISSUE STIMULATOR

Addison D. Cole, Natick, Mass., assignor to Adcole Corporation, Waltham, Mass.

Filed June 1, 1970, Ser. No. 41,890
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 5 Claims



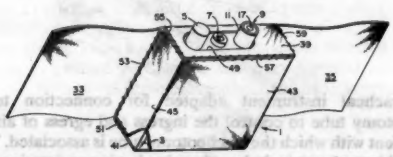
An implantable tissue stimulator comprising a metal case enclosing a battery and a pulse generating circuit powered thereby, in which the circuit includes a terminal common to the case and a stimulating terminal extending through and insulated from the case, a flexible probe assembly comprising an exposed electrode adapted to be placed in proximity to and in electrical contact with tissue to be stimulated, and an elongated flexible insulated cable connecting the electrode to a connector part adapted to be secured to the stimulating terminal during implantation.

3,683,933

IMPLANTABLE TISSUE STIMULATOR WITH A POROUS ANCHORING ENCLOSURE

Peter B. Mansfield, 159 Washington Ave., Needham, Mass.

Filed June 22, 1970, Ser. No. 48,379
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 4 Claims



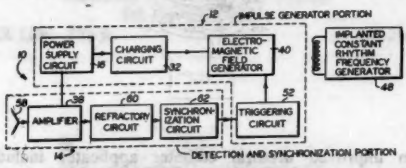
An implantable cardiac pacer housing comprising a fabric panel having suture flaps extending from a central compartment receiving the power supply and circuit container of a plug connected pacer, a port being provided in said compartment to pass connectors on the container for mating with the plug of a flexible probe and a flap enabling removal and replacement of the container.

3,683,934

METHOD AND APPARATUS FOR PROVIDING SYNCHRONIZED STIMULUS AND COUPLED STIMULATION FROM AN IMPLANTED HEART STIMULATOR HAVING A CONSTANT RHYTHM

Bohdan A. Bukowiecki, L. Staffa 12/14 m 23, and Mariusz J. Stopczyk, Dabrowskiego 86 m 71, both of Warsaw ul 23, Poland

Continuation-in-part of Ser. Nos. 853,843, Aug. 28, 1969, abandoned, and Ser. No. 853,882, Aug. 28, 1969, abandoned. This application Sept. 21, 1970, Ser. No. 74,007
Claims priority, application Poland, Aug. 31, 1968, 128847; Aug. 31, 1968, 128849
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 16 Claims



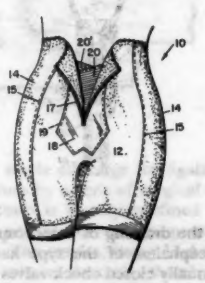
An apparatus which provides an electromagnetic field in synchronization with the occurrence of a detected heart function potential is located outside of a patient's body in which a heart stimulator having a constant rhythm frequency generator has been implanted. The implanted generator is magnetically coupled within the electromagnetic field so as to be responsive to the occurrence thereof. An electrical heart stimulus in synchronization with the detected potential is thereby enforced from the implanted generator in response to the occurrence of the field. Coupled stimulation is provided by the apparatus by routing the detected signal along an additional branch path which includes a delay line. The delayed signal provides a second electromagnetic field a preselected delayed time after the provision of the synchronized field whereby a synchronized heart stimulus and a second, coupled heart stimulus are provided in response to a single detected heart function potential.

3,683,935

GIRDLE TYPE GARMENTS

Leonard A. Rosner, c/o Glamorise Foundations Inc. 135 Madison Ave., New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,412
Int. Cl. A41c 1/00
U.S. Cl. 128—547 6 Claims

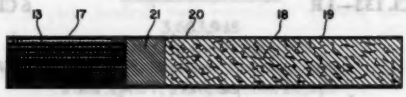


Front, rear and side garment sections are stitched together in body encircling relationship and one of the sections, such as the front section or one of the side sections, is openable. The openable section includes a non-elastic outer panel having a vertical slit with a slide fastener at edges of the slit, and a pair of mutually crossed elastic inner panels which extend diagonally transversely of the slit at the inside of the outer panel and are stitched to side edges of the outer panel.

3,683,936
SUBSTITUTE FOR A SMOKING ARTICLE SUCH AS A CIGARETTE

Cyril F. O'Neil, Jr., New York, N.Y., assignor to The H-2-O Filter Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,541
Int. Cl. A24b *15/00*; A24f *13/00, 25/00*
U.S. Cl. 131—8 5 Claims



This invention provides a substitute for a smoking article wherein the taste and aroma of burning tobacco may be inhaled without the inhalation of smoke created by the combustion of tobacco.

3,683,937
TOBACCO EXPANSION PROCESS

James D. Fredrickson, and Ella Sue Hickman, both of Winston-Salem, N.C., assignors to Reynolds Leasing Corporation, Jacksonville, Fla.

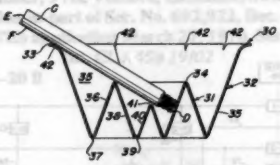
Filed Dec. 24, 1970, Ser. No. 101,440
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P 17 Claims

The filling capacity of tobacco is increased by contacting tobacco with the vapors of a volatile organic solvent which is inert to the tobacco and has an atmospheric boiling point of between − 50° and 80° C. The tobacco treated is free of any liquid or solid form of the solvent when contacted by the vapors and is maintained at a temperature above the boiling point of the said compound at the pressure prevailing during the contacting. Thereafter, without cooling the tobacco below the said boiling point, the pressure is rapidly reduced or the temperature rapidly increased to provide vapor releasing conditions and expansion of the tobacco.

3,683,938
ASH TRAY

David L. Rowland, 49 W. 55th St., New York, N.Y.

Continuation of Ser. No. 675,400, Oct. 16, 1967, abandoned. This application Sept. 14, 1970, Ser. No. 72,147
Int. Cl. A24f *19/00*
U.S. Cl. 131—240 R 2 Claims



An ash tray comprising an inner cup-shaped receptacle surrounded by an outer cup-shaped receptacle. Both receptacles have an upper smooth edge so that a cigarette can rest on the two edges; the upper edge of the inner receptacle is lower than that of the outer receptacle, so that a line tangent to the two edges is inclined to the horizontal at an angle lying between 10° and 40°. The distance from the upper edge of the inner receptacle to the opposite wall of the inner receptacle (as measured along an extension of the line tangent to both edges) is between one-eight and one-half the length of a cigarette, and the distance between the two edges on the same line of tangency is between one-half and full length of a cigarette minus the distance from the upper edge of the inner receptacle to the opposite wall of the inner receptacle. The inner receptacle may be circular with a downwardly and inwardly sloping inner surface and a downwardly and outwardly inclined outer surface. The outer receptacle has a downwardly and inwardly sloping wall.

3,683,939
PROTEINACEOUS COSMETIC MATERIAL FOR HAIR CONDITIONING

Vernon L. Johnsen, La Grange, and Raymond S. Burnett, Chicago, both of Ill., assignors to Wilson Pharmaceutical & Chemical Corporation

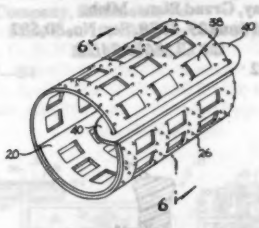
Continuation-in-part of Ser. No. 548,374, May 9, 1966, abandoned, which is a continuation-in-part of Ser. No. 301,970, Aug. 14, 1963, abandoned. This application May 28, 1970, Ser. No. 41,594
Int. Cl. A45d *7/04*; A61k *7/06*
U.S. Cl. 132—7 11 Claims

The invention relates to compositions useful in cosmetics and particularly adapted for the treatment of hair, made up of water and 5 to 60 percent of polypeptides having a Formol Nitrogen value in the range between 8 and 17, which polypeptides are the product of subjection of collagen-containing material to heat in the presence of water under conditions of temperature, pressure and time whereby the gel forming character of the protein hydrolysate is reduced, of removal of anions from the hydrolysate by ion exchange and of further hydrolyzing of the hydrolysate with enzyme material having proteolytic activity.

3,683,940
ADJUSTABLE HAIR CURLER

Marlene Debue, 2402 Shenandoah St., No. 10, Los Angeles, Calif.

Filed Feb. 16, 1971, Ser. No. 115,633
Int. Cl. A45d *2/02*
U.S. Cl. 132—39 10 Claims



An adjustable hair curler which will lie flat when not in use and which may be rolled up to automatically lock at any of a plurality of hair curler sizes. The hair curler is comprises of a first elongated rectangular section having a plurality of holes therein aligned in a plurality of rows, and having a locking member adjacent one end of the elongated portion in the form of a buckle having protrusions adapted for locking in any of the plurality of holes in the elongated portion.

3,683,941
HAIRPIECE WITH SIMULATED HAIRLINE

Kenneth Friedland, Bayside, N.Y., assignor to Matchmaker Industries, Inc., New York, N.Y.

Filed May 3, 1971, Ser. No. 139,786
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 10 Claims

A simulated hairline for a wig, toupee or other hairpiece is provided. The simulated hairline includes a flesh colored member which is made from a reticulated material such as lace, netting or mesh and which has hair secured thereto in

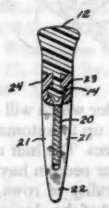
spaced relation and an elastic band which is secured to opposing sides of the reticulated member and is adapted to be extended about a person's head for compressively engaging the reticulated member with the person's scalp so that portions of the scalp will be forced into the pores of the reticulated member establishing a substantially smooth surface therewith. A hairpiece including a foundation having hair applied thereto and having a front hairline edge portion is secured to the person's head with the front hairline edge portion proximate the reticulated member and with at least a portion of the reticulated member located intermediate the front hairline edge portion of the foundation and the wearer's face. When secured to the wearer's head, the foundation encloses the elastic band and the opposing sides of the reticulated member. The presence of the reticulated member is accordingly completely concealed and the hair of the simulated hairline appears to be growing out of the person's scalp. When the hair of the simulated hairline is combed away from the person's face and into the hair of the foundation a natural hairline is provided for the hairpiece.

3,683,942

CARTRIDGE COMB

Nicholas D. McKay, Grand Blanc, Mich.

Filed June 29, 1970, Ser. No. 50,582
Int. Cl. A45d *24/22*
U.S. Cl. 132—112 6 Claims



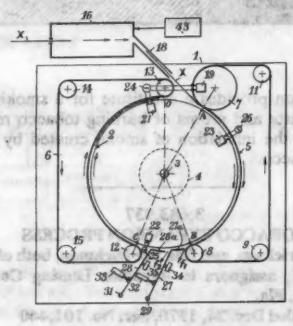
A comb structure having a detachable toothed refill cartridge element with a coloring or hair dressing stick element provided therein for automatically treating or coloring the hair by passing the comb therethrough. The toothed cartridge element is configured to permit the hair to come into contact with the coloring or hair dressing stick contained therein. The stick slowly releases coloring or hair dressing to hair coming into contact therewith. The cartridge element is selectively replaceable when the coloring or hair dressing stick element has been expended. The use of the replaceable cartridge element avoids the necessity for directly handling the coloring sticks.

3,683,943

AUTOMATIC SHEET STORAGE APPARATUS

Edourad De Crepy, Paris, France, assignor to Societe Anonyme Francaise des Apparells Automatiques Taximetres-Taxiphones S.A.F.A.A., Paris, France

Filed June 9, 1970, Ser. No. 44,753
Claims priority, application France, June 11, 1969, 6919340
Int. Cl. B65h *29/58*
U.S. Cl. 133—1 R 6 Claims



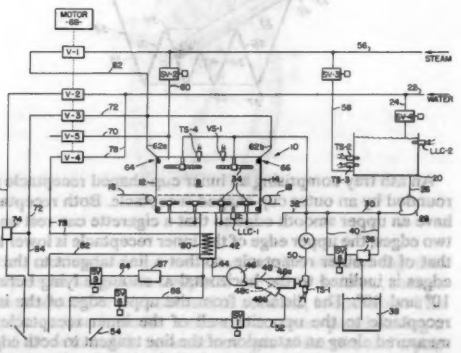
An automatic apparatus for temporarily storing sheets or cards, notably banknotes, characterized in that it comprises a wheel rotatably driven from an electric motor and first and second endless belts passing over guide pulleys and contacting two arcs of the outer periphery of said wheel, and an electric control circuit comprising a first photocell detector disposed in said inlet passage and detecting the presence of a sheet in said inlet passage so as to start said electric motor, and a second photocell detector located in the vicinity of the downstream pulley of said second belt for controlling the stoppage of said electric motor when the presence of a moving sheet is detected between said second belt and said wheel.

3,683,944

CONTROL APPARATUS FOR WASHER-STERILIZER

Edgar L. Anderson, Penfield, and Michael L. Schneier, Pittsford, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,175
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 R 10 Claims



Disclosed is a washer-sterilizer apparatus having a water reservoir which supplies both the wash and rinse water and

two pumps, one pump for pumping water from the reservoir for filling and rinsing and another for recirculating water in the washer-sterilizer during the wash cycle and draining. The reservoir is heated after filling to provide rinse water at a temperature higher than the wash water temperature. The apparatus controls are completely automatic and may be integrated with controls for loading and unloading devices to provide a completely automated system.

3,683,945

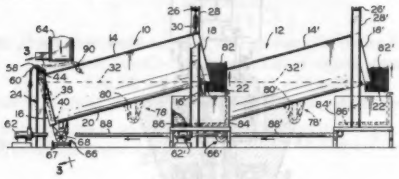
FLOOD CELL APPARATUS

Lee Weisser, 2360 N.W. 7th Place, Gresham, Oreg.

Filed April 7, 1970, Ser. No. 26,285

Int. Cl. B08b *3/02*

U.S. Cl. 134—68 **8 Claims**



A flood cell apparatus for conveying and processing materials, e.g. for washing, conveying, and processing vegetables and the like, comprises an inclined tank having a rounded bottom and a closed first or inlet end. The second or outlet end of the tank is open and upraised with respect to the first end for defining a flood level over which liquid introduced into the tank leaves the tank. Plural adjustable headers provided with nozzles direct streams of water under pressure from the inlet end of the tank toward the outlet end. Vegetables or the like are introduced into the tank and are impelled toward the outlet end while the turbulence of water cleans the vegetables. Waste material moves down the tank toward the inlet end where a waste outlet valve is provided. Successive tanks may be employed for heating and cooling operations or the like.

3,683,946

Patent Not Issued For This Number

3,683,947

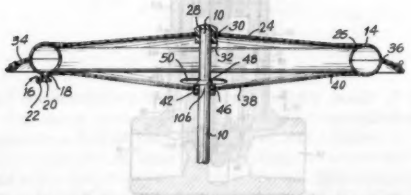
UMBRELLA CONSTRUCTION

Armand A. Muller, 9 rue Voltaire, Lausanne, Switzerland

Continuation-in-part of Ser. No. 692,922, Dec. 22, 1967, abandoned. This application March 27, 1970, Ser. No. 23,176

Int. Cl. A45b *19/02*

U.S. Cl. 135—20 B **1 Claim**



An umbrella construction which includes an umbrella staff, an inflatable ring circumscribing the staff, a cover extending from the upper end of the staff and connected to the ring, and a veil extending from a lower portion of the staff to the ring and coaxial with the cover. The umbrella, in deflated condition, converts into a carrying case.

3,683,948

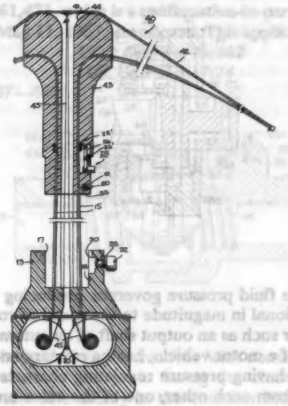
UMBRELLA OF COLLAPSIBLE CONSTRUCTION

Paul J. Cohen, 1655 Flatbush Ave., Brooklyn, N.Y.

Filed April 9, 1971, Ser. No. 132,784

Int. Cl. A45b *19/00, 25/02*

U.S. Cl. 135—20 **14 Claims**



The umbrella is constructed so as to collapse into a compact condition of about 6 to 8 inches in length. In the collapsed condition, the cover of the umbrella is folded up to conform to the length of the collapsed umbrella. Resilient tapes are used to form the shaft of the umbrella and to spread out the cover.

3,683,949

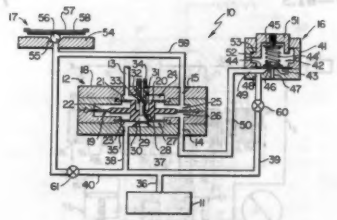
PNEUMATIC CONTROL SYSTEM AND METHOD OF OPERATING THE SAME OR THE LIKE

Charles H. Perkins, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 19, 1970, Ser. No. 81,828

Int. Cl. G05d *23/00*

U.S. Cl. 137—84 **20 Claims**

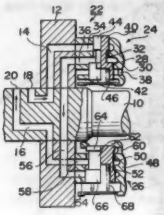


Passage defining means interconnecting a source of pneumatic fluid to a pneumatically operated control device. Flow control variable restrictor means is disposed in the passage defining means intermediate the source and the control device whereby the passage defining means has a part thereof disposed between the restrictor means and the control device. A variable vent means is interconnected to the part of the passage defining means and is responsive to pressure in that part of the passage defining means. The flow control variable restriction means tends to maintain a substantially constant pneumatic flow in the part of the passage defining means even though the pressure in the part of the passage defining means varies and/or the pressure of the pneumatic source varies.

3,683,950
COMPOSITE FLUID PRESSURE GOVERNOR

Katsuo Yamada, 910, Ichisawa-cho, Hodogaya-ku, Yokohama, Japan

Filed July 17, 1970, Ser. No. 55,669
Int. Cl. G05d 13/36
U.S. Cl. 137—54 5 Claims

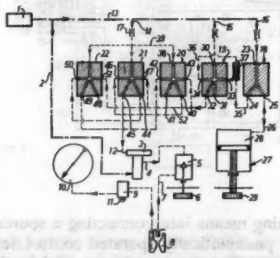


A composite fluid pressure governor producing a pressure signal proportional in magnitude to the speed of rotation of a rotary member such as an output shaft of an automatic power transmission of a motor vehicle, having primary and secondary valve units having pressure regulating characteristics that are different from each other, one of the valve units being a switch-over or shuttler valve whereby a fluid pressure is passed when a centrifugal force resulting from the rotation of the rotary member increases to a predetermined point and shut off when the centrifugal force decreases to a point sizeably lower than the aforesaid predetermined point, the other of the valve units being a pressure modulator valve which delivers a fluid pressure varying in accordance with the revolution speed of the rotary member. The two valve units are mounted 180° out of phase with respect to each other on a horseshoe-shaped governor body so that the governor structure can be mounted with utmost ease on the rotary member during assembly.

3,683,951
PERIODIC GAS GENERATOR

Georges Beaumont, 44 rue de Miromesnil, Paris 8e, France

Continuation-in-part of Ser. No. 858,085, Sept. 15, 1969, abandoned. This application May 24, 1971, Ser. No. 146,405
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 7 Claims



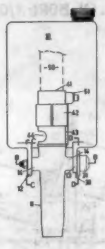
This periodic gas generator adapted for use notably as a volumetric respirator is designed for supplying gas during a fraction 1/*n* of the periodic time of operation of the generator, notably one-third of this time corresponding to the inspiration time period, the other two thirds enabling the user to expire the previously breathed gas, this invention permitting this cycle to take place irrespective of the generator frequency and also of the volume of gas delivered thereby.

3,683,952
Patent Not Issued For This Number

3,683,953
CLEANING DEVICE

William Joel Reginald Edlin, 26A Manson St., Palmerston North, New Zealand

Filed Feb. 9, 1970, Ser. No. 9,780
Claims priority, application New Zealand, July 4, 1969, 157,010
Int. Cl. A47l 11/00
U.S. Cl. 137—205.5 6 Claims

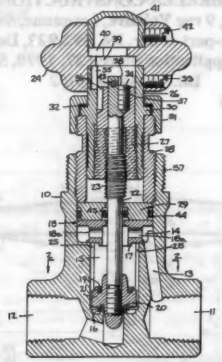


A cleaning device for fitting into a pressurized fluid supply line, the device comprising an adaptor pipe for incorporation into the fluid supply line, a cleaning medium supply chamber adjustably mounted on the adaptor pipe and connected into the pipe so that some of the supply fluid will feed into the chamber to force cleaning medium from the chamber into the pipe, a valve positioned to control fluid flow, a further valve positioned to control flow of the cleaning medium and filters located in the adaptor pipe to ensure mixing of the cleaning medium and supply fluid within the adaptor pipe and prevent any backflow of the cleaning medium.

3,683,954
DOUBLE ACTION FLUID VALVE

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation

Continuation-in-part of Ser. No. 858,575, Sept. 17, 1969, abandoned. This application Sept. 16, 1970, Ser. No. 72,847
Int. Cl. F16k 43/00, 51/00
U.S. Cl. 137—269 9 Claims



A valve handle or other manipulator is connected to a valve stem by an intervening pair of concentric sleeves surrounding the stem. A keying element is shiftable to join the inner sleeve to either the stem or the outer sleeve for selected conjoint

movement therewith. A reverse thread arrangement between inner sleeve and stem, on the one hand, and inner and outer sleeve, on the other hand, provides for selectably reversing the direction of longitudinal movement of the stem relative to the direction of handle manipulation and for correspondingly shifting the range of movement of the stem to bring a different one of two valve elements into operative relation with a respective seat.

3,683,955

GAS CONTROL VALVE

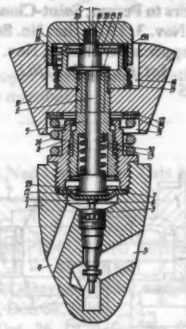
Ian L. Beynon, Templestowe, Victoria, Australia, assignor to Companion Heaters Proprietary Limited, Victoria, Australia

Filed March 31, 1970, Ser. No. 24,323

Claims priority, application Australia, April 1, 1969, 52,893/69

Int. Cl. F16k *25/00*

U.S. Cl. 137—495 **8 Claims**



A flow control valve for gas fired hand tools having adjustable pilot flow and main flow conditions controlled by one valve element. The valve has two controls: one to set the pilot and main flow rates and the other to change the valve from pilot condition to main flow condition.

3,683,956

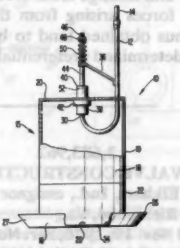
APPARATUS FOR WATERING ANIMALS

Robert K. Burrows, Route 1, Havana, Ark.

Filed May 27, 1970, Ser. No. 40,869

Int. Cl. F16k *21/16*

U.S. Cl. 137—408 **1 Claim**



A water valve and an animal waterer incorporating that valve. A water inlet pipe terminates in an upwardly extending outlet, and a closure mechanism is resiliently supported above the outlet and in turn supports a water retainer. When water is in the retainer to the desired level, the closure mechanism is held against the water outlet, cutting off the flow of water. When the water is below the desired level, the resiliently supported closure mechanism lifts, permitting water to flow from the inlet pipe to the retainer until the desired level is again reached.

3,683,957

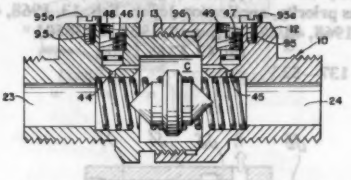
SAFETY VALVE

Asa D. Sands, 3606 Federal St., Camden, N.J.

Continuation-in-part of Ser. No. 771,595, Oct. 29, 1968, Pat. No. 3,561,471, which is a continuation-in-part of Ser. No. 637,714, May 11, 1967, abandoned. This application Sept. 29, 1970, Ser. No. 76,462

Int. Cl. F16k *17/24*

U.S. Cl. 137—460 **2 Claims**



A valve body defining a chamber with coaxial valve ports and valve seats on the ports facing the chamber. A valve member is movable axially in the chamber into engagement with either of the seats. The valve member is supported in the chamber, normally centrally between the seats, by a pair of coil springs which are seated in the valve ports and on opposite sides of the valve member. In some embodiments additional support of the valve member is provided by a rod extending axially through the valve member and having its end portions slidably journalled in bearing means provided in the valve ports. A fluid by-pass from one port to the other is provided, either in the valve body or axially through the valve member.

3,683,958

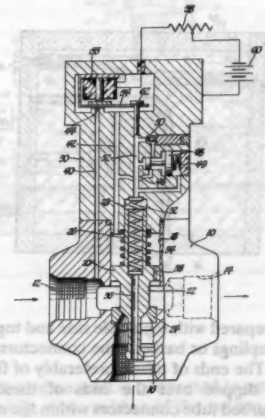
POWER TRANSMISSION

John W. Curnow, Utica, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Nov. 30, 1970, Ser. No. 93,616

Int. Cl. F16k *17/02*

U.S. Cl. 137—489 **5 Claims**



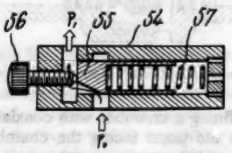
A fluid pressure relief valve has a pilot chamber, the pressure in which may be varied to determine the level at which the valve will open. A pilot flow path extends from the inlet

through the pilot chamber to the outlet and has restrictions, both upstream and downstream, from the pilot chamber. The downstream restriction is pressure compensated to maintain a fixed rate of flow out of the pilot chamber. Upstream there is a fixed restriction and an electromagnetically variable restriction which enables the pressure at which the valve will open to be adjusted electrically to any value over a continuous range.

3,683,959
TORQUE TRANSMISSION MEMBER

Shu Tsuji, 21-5, 3, Honda Kokubunji-cho, and Hiroshi Tsuji, 1318-8, Shimofuda, both of Chofu-shi, Tokyo, Japan

Division of Ser. No. 760,279, Sept. 17, 1968, Pat. No. 3,543,902. This application Jan. 6, 1970, Ser. No. 880
Claims priority, application Japan, Feb. 13, 1968, 43/9039; June 5, 1968, 43/38500; June 5, 1968, 43/38501
Int. Cl. F16k *17/00*
U.S. Cl. 137—523 **1 Claim**

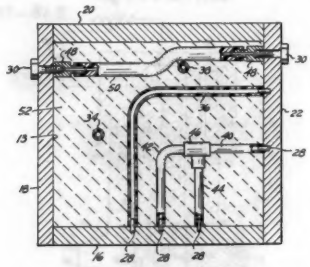


In a torque control device a speed control valve is used for controlling the number of revolutions of an air motor for applying the torque. When the torque output is to be increased, the valve opens and increases the air pressure to the air motor. The speed control device includes an adjusting screw for regulating a spring so that the valve opening is regulated and the number of revolutions of the air motor can be selectively controlled at no load or light load.

3,683,960
BLOCK MANIFOLD FOR FLUID CONTROL SYSTEMS AND METHOD OF MAKING THE SAME

Jerry Kirsch, 36 Beacon Hill, Grosse Pointe Farms, Mich.

Filed Nov. 19, 1970, Ser. No. 91,077
Int. Cl. F16k *11/10*
U.S. Cl. 137—594 **5 Claims**

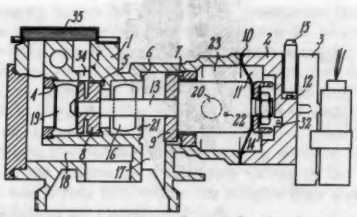


A mold is prepared with separable side and top walls having plugs, pipe couplings or barbed tube connectors seated in the walls thereof. The ends of tubes, preferably of flexible plastic material, are slipped over the ends of these plugs, pipe couplings or barbed tube connectors within the mold cavity. A protective coating or "release coating" is placed on the inner surface of the mold to prevent adhesion of plastic to the mold walls, whereupon synthetic plastic, preferably transparent, in a fluid state is poured into the mold cavity - preferably the two epoxy resin fluids which, when combined and allowed to set produce a solid transparent epoxy resin body. The synthetic plastic material in which the tubes are thus embedded is permitted to solidify, after which the walls of the mold are withdrawn, leaving the preferably transparent synthetic plastic block with the ends of the tubes or the couplings attached thereto exposed at the sides of the block. Tee couplings connected to such tubes may optionally be embedded in the plastic body. The various conduits of a fluid system as well as valves may then be connected to the tubes or mounted on and secured to the block in communication with the ports provided by the exposed open ends of certain of the tubes, thereby compressing into a very small space tube circuits which would otherwise occupy a much larger space. Changes in the circuit are easily made by shifting the external circuit tubes between different sets of connections, couplings or ports.

3,683,961
VALVES

Jacques Launay, Colombes, and Jacques Mongault, Paris, both of France, assignors to Permo, Saint-Cloud, France

Filed Nov. 3, 1970, Ser. No. 86,462
Claims priority, application France, Nov. 3, 1969, 6937680
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.5 **11 Claims**



A method whereby the distribution device of a valve constituted by a train of valve-discs mounted on a common valve-stem is put in a preferential position, this position being attained by utilizing the pressure of the liquid which is present within the distribution device, said pressure being exerted independently of the operating means of the distribution device, on the complete valve train in order to subject this latter to a resultant force which always has the same direction. All the valve-discs which form part of the distribution device including the drain valve are grouped together on a common stem; the valve-discs are suitably dimensioned with respect to each other and the flow and leakage cross-sections are also suitably dimensioned; the forces arising from the flow of hydraulic fluid which are thus obtained tend to bring the distribution device into its predetermined preferential position.

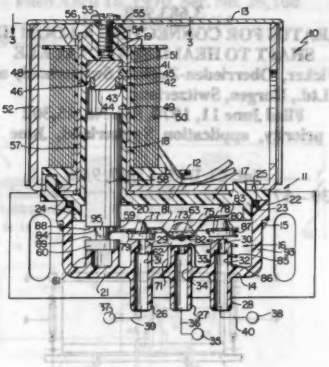
3,683,962
VALVE CONSTRUCTION

Arthur L. Good, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 19, 1970, Ser. No. 90,955
Int. Cl. F16k *11/02*
U.S. Cl. 137—609 **12 Claims**

A housing having a valve seat and a valve member for opening and closing the valve seat. A lever is pivotally carried by the housing and carries the valve member whereby pivoting movement of the lever moves the valve member relative to the valve seat for controlling the same. A movable actuator member is carried by the housing and is operatively interconnected to the lever by a leaf spring so that movement of the ac-

tuator member causes pivotal movement of the lever whereby the leaf spring eliminates the need for any adjustments necessary to maintain proper valve closure relative to a seated position of the actuator member.



3,683,963

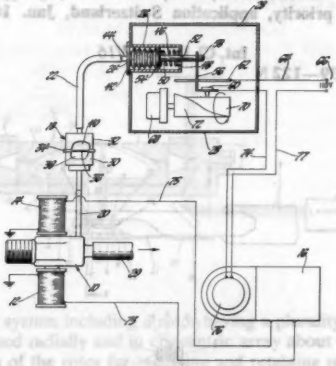
Patent Not Issued For This Number

3,683,964

PRESSURE COMPENSATING TIMED FLUID FILL SYSTEM

Marshall C. Harrold, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1970, Ser. No. 83,961
Int. Cl. D06f *39/08*
U.S. Cl. 137—624.11 5 Claims



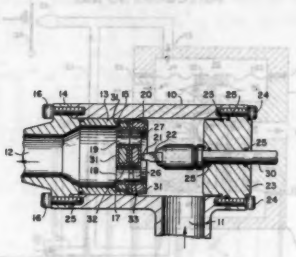
A pressure compensating timed fill system with particular application to a clothes washing machine wherein an electrically controlled fill valve is energized for a time period dependent upon the prevailing pressure of the fluid being supplied to the fill valve. The pressure of the incoming fluid is applied to a bellows which positions a sliding contact upon a continuously electrically driven drum, the drum comprising varying areas of conductive metal whereby a circuit including a washing machine timer motor controlling an operational cycle is energized in accordance with the pressure of incoming water to the washing tub.

3,683,965

ADJUSTABLE CHOKE VALVE

James H. McClure, Dallas, and James W. McCrary, Richardson, both of Tex., assignors to Materials Technology Corporation, Dallas, Tex.

Filed April 8, 1970, Ser. No. 26,698
Int. Cl. F16k *11/02, 3/08*
U.S. Cl. 137—625.3 3 Claims



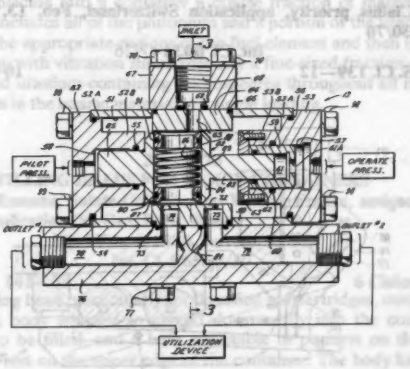
Disclosed is an adjustable choke valve having opposed abutting discs which have apertures passing therethrough for adjustably varying the flow of fluid through the valve as one disc is rotated with respect to the other. The opposed mating surfaces of the discs are covered with coatings of dense impermeable material having a hardness of at least 2,700 on the Knoop scale and are polished to provide an effective fluid seal therebetween. Also disclosed are methods for fabricating steel discs with titanium carbide coated graphite inserts in the opposed mating surfaces.

3,683,966

THREE POSITION VALVE

Vivian Hershel Payne, Houston, Tex., assignor to Offshore Systems Inc., Houston, Tex.

Filed April 2, 1970, Ser. No. 25,104
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 9 Claims



A valve wherein an inlet is connected to either of two outlets alternatively, or to neither of the outlets, in accordance with the relationship between a pilot pressure and an operational pressure.

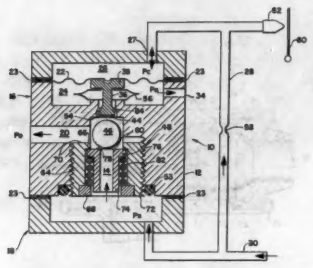
3,683,967

Patent Not Issued For This Number

3,683,968
REVERSE-ACTING RELAY VALVE

Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed June 1, 1970, Ser. No. 42,377
Int. Cl. F16k 31/365
U.S. Cl. 137—625.66 2 Claims

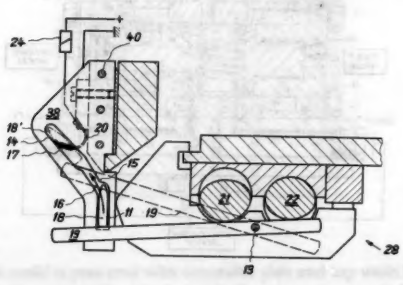


A reverse-acting relay valve which employs a pressure responsive diaphragm driving an operably related pin. The pin contacts a throttling ball, moving it up and down as the diaphragm moves up and down. The diaphragm moves down with an increase in pressure and up with a decrease in pressure. Movement of the ball in the downward direction is limited by a supply seat, and movement of the ball in the upward direction is limited by an exhaust seat. When the ball is in its downward position, thus resting on the supply seat, flow through the relay is cut off. When the ball is in its upward position, thus against the exhaust seat, flow through the relay is at its greatest. When the ball is between the supply seat and the exhaust seat, some flow through the relay passes through the exhaust seat to a vent.

3,683,969
GUIDE ARRANGEMENT FOR WEFT THREAD INSERTING ELEMENTS

Edgar H. Strauss, Widenweg 11, 8630 Ruti, Zurich, Switzerland

Filed Jan. 25, 1971, Ser. No. 109,298
Claims priority, application Switzerland, Feb. 13, 1970, 2030/70
Int. Cl. B03d 47/26
U.S. Cl. 139—12 10 Claims

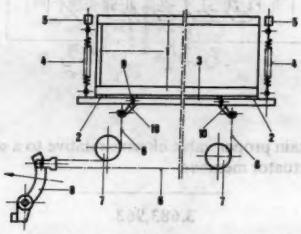


A guide arrangement for the shuttles on a wave-type loom wherein guide means guide the shuttles across the loom along a predetermined path and drive means operatively associated with the guide means apply a force to each of the shuttles to move the shuttles along the predetermined path, the arrangement further comprising auxiliary guiding means positioned adjacent to the guide means for guiding the shuttles out of the predetermined path and for receiving the shuttles when the force applied to each of the shuttles by the driving means is greater than that required to effect the movement of the shuttles along the predetermined path across the loom, thereby preventing jamming of the shuttles within said guide means.

3,683,970
APPARATUS FOR CONNECTING A LOOM HEALD SHAFT TO HEALD SHAFT TACKLE

Walter Wicker, Oberrieden-Zurich, Switzerland, assignor to Staubli Ltd., Horgen, Switzerland

Filed June 11, 1970, Ser. No. 45,302
Claims priority, application Switzerland, June 13, 1969, 9032/69
Int. Cl. D03c 13/00, 9/06
U.S. Cl. 139—57 6 Claims

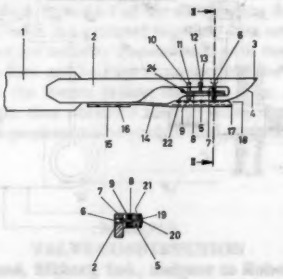


An arrangement of suspension hook between the heald shaft of a loom and the tackle of a dobby wherein the tractive force of the tackle eliminates continuously the play resulting from wear.

3,683,971
FILLING WITHDRAWING CARRIER FOR WEAVING MACHINE

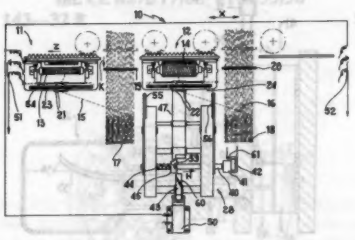
Othmar Bruhwiler, Brugg, Switzerland, assignor to Georg Fischer AG-Brugg, Brugg, Switzerland

Filed Dec. 28, 1970, Ser. No. 101,832
Claims priority, application Switzerland, Jan. 16, 1970, 619/70
Int. Cl. D03d 47/16
U.S. Cl. 139—122 N 1 Claim



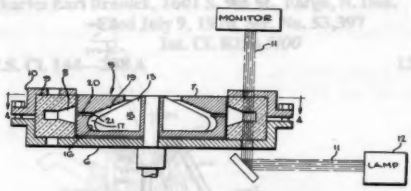
The invention relates to a filling withdrawing carrier for a weaving machine in which filling is inserted upon being drawn from a supply package situated outside of the warp shed, said carrier being provided with a thread guiding cam to guide the filling thread on its takeover from the inserting carrier in combination with a flat spring adjacent to the thread guiding cam between which the filling may pass to be trapped and in which carrier tension is imposed on the filling by means other than the flat spring.

3,683,972
DEVICE FOR AUTOMATICALLY CHANGING THE LOOM COPS
Arturo Colombo, Milan, Italy, assignor to Sitam Societa' Industriale Telai Automatici Milano, Milan, Italy
Filed April 16, 1970, Ser. No. 29,100
Int. Cl. D03d 45/20
U.S. Cl. 139—243 9 Claims



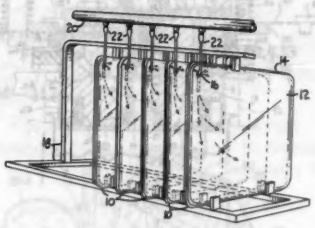
A device for automatically changing cops in a loom and particularly in a ribbon loom having one or more shuttles and a slay positively driven by a loom main shaft. Said device comprises at least a presser by which a stored full cop is driven to a shuttle seat, wherefrom an empty cop is ejected, said presser being directly and positively driven by a slide link secured to the slay. The operation of said device is pre-set in a preceding shuttle stroke by means of an electric circuit that is closed through the shuttle carrying said empty cop to be replaced, when its weft yarn is substantially woven-off.

3,683,973
ROTOR SYSTEM AND METHOD FOR MANIPULATING LIQUID MATTER
Donald W. Hatcher, Sr., Route 4, Box 207, Clinton, Tenn.
Filed Oct. 13, 1970, Ser. No. 80,347
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—1 8 Claims



A rotor system including a rotor having a plurality of cavities disposed radially and in concentric array about the rotational axis of the rotor for receiving and retaining respective quantities of liquid, each cavity having an overflow through which liquid in excess of the volumetric capacity of the cavity is expelled upon rotation of the rotor, and displacement means of known displacement volume movable into each cavity upon rotation of the rotor whereby a known quantity of liquid is displaced from each cavity and expelled from the rotor into appropriate receptacles. The method disclosed includes the step of admitting gross quantities of liquid to the rotor cavities initially and expelling the liquid in excess of the cavity volume by rotating the rotor. Subsequently, in accordance with the disclosed method, the rotor is rotated with a displacement body in each cavity to expel a further, but known, quantity of liquid from each cavity.

3,683,974
METHOD FOR PURGING AND FILLING MULTIPLE GLAZED UNITS
John L. Stewart, Apollo; Renato J. Mazzoni, Tarentum, and Lester F. Schutrum, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 845,988, July 30, 1969, abandoned. This application Oct. 8, 1970, Ser. No. 79,077
Int. Cl. B65b 31/04
U.S. Cl. 141—4 6 Claims



A method for purging and filling a multiple glazed unit with a fluorocarbon gas in which the unit is supported so that its pore hole is located in an upper disposed region of the unit and, while so supported, the gas is injected into the unit and air is simultaneously displaced therefrom.

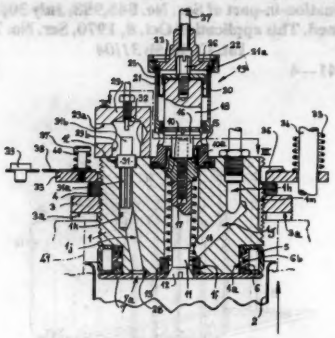
3,683,975
METHOD OF VIBRATORY LOADING NUCLEAR FUEL ELEMENTS
John D. Sease, and Francis E. Harrington, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 12, 1971, Ser. No. 115,118
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—12 5 Claims

Elongated multi-region LMFBR fuel elements are prepared by preplacing into a container a coarse fraction of material which includes all of the plutonium and a portion of the uranium in the appropriate regions of the fuel element and then infiltrating with vibration simultaneously a fine-sized fraction of depleted uranium-containing microspheres throughout all interstices in the coarse material in a single loading.

3,683,976
FILLING HEADS FOR LIQUID CONTAINERS
Roger Remane, Sainte-Colombe-Les-Vienne, France, assignor to Application Des Gaz, Paris, France
Filed Feb. 6, 1970, Ser. No. 9,321
Int. Cl. B65b 3/30
U.S. Cl. 141—59 6 Claims

A filling head, particularly for liquefied gas cartridges, comprises a body adapted to extend downwardly into the container to be filled, and a base adjustable in position on the body to rest on the upper edge of the container. The body has an inflatable peripheral gasket to form a seal against the inner wall of the container, a liquid inlet conduit with pneumatically actuated valve means, and an exhaust passage formed with a vertical bore enclosing with a small clearance a slidable piston-like member. When the head is raised by a container on an automatic filling machine, the valve means are opened and after a short while the gasket is inflated, this delay permitting free escape of the burst of gas which appears when the cold liquid contacts the relatively hot container wall, without the said burst actuating the piston-like member. During the subsequent filling operation air and gas may freely flow through

the exhaust passage at a moderate velocity without noticeably actuating said member, but when the container is filled, the liquid flowing through said passages raises said member, which causes closing of the valve means.



3,683,977

LIQUID DISPENSING APPARATUS

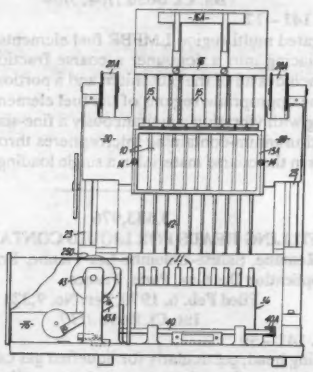
James A. Crowe, Glenrothes, England, and Willi Krattenmacher, Geneva, Switzerland, assignors to Beckman Instruments, Limited, Glenrothes, Great Britain

Filed May 15, 1970, Ser. No. 37,500

Claims priority, application Great Britain, May 21, 1969, 25,804/69

Int. Cl. B65b *3/12*

U.S. Cl. 141—130 5 Claims



There is disclosed a liquid-dispensing apparatus including a support, a position-adjustable head mounted on said support and adapted to carry in a depending position a plurality of syringes, having reciprocal pistons. The head is motor driven for raising and lowering the syringe needles into and out of containers for taking in and dispensing fluids therefrom. A precision ground rack and pawl arrangement is provided for predetermining the amounts of fluid dispensed from the syringes. A tray transport is provided for moving a plurality of rows of containers beneath the syringes. A control circuit provides for either manual or automatic operation of the system.

3,683,978

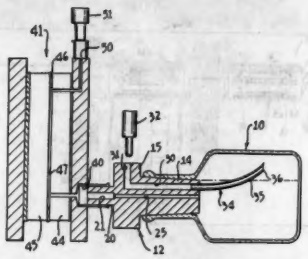
FLUID TRANSFER APPARATUS

Richard Norman Jones, 37 Woodlawn Ave., Ottawa, Ontario, and Joseph Marcel Armand Nadeau, 43A Montclair St., Hull, Quebec, both of Canada

Continuation of Ser. No. 710,239, March 4, 1968, abandoned. This application Sept. 17, 1970, Ser. No. 73,230

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—285 3 Claims



A fluid transfer apparatus for handling volatile liquids including a container and a stopper in fluid tight engagement with the neck of the container, the stopper being provided with a liquid passage, an air passage including a tube extending into the container and a plug to close the air passage. A nozzle communicating with the liquid passage tightly engages an opening in the vessel into which the liquid is to be transferred and the plug in the air passage is removed so that liquid will flow into the vessel.

3,683,979

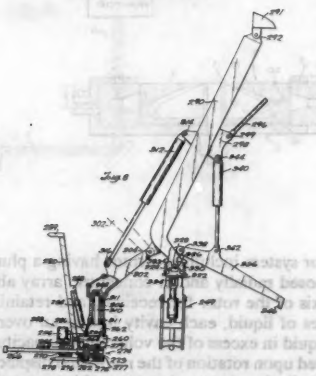
TIMBER HARVESTER

Waino Peltola, Route 1, Tripoli, Wis., and Ervin W. Braski, Brantwood, Wis.

Division of Ser. No. 734,923, June 6, 1968, Pat. No. 3,543,819. This application July 22, 1970, Ser. No. 57,281

Int. Cl. B27b *17/02*; A01g *23/08*

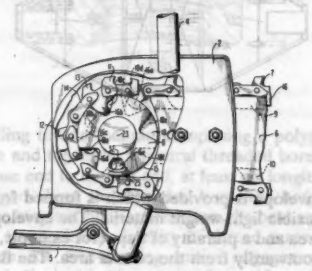
U.S. Cl. 143—32 N 5 Claims



Disclosed herein is a timber harvester in the form of a vehicle which comprises in unitary assembly, a main frame propelled by endless tracks, a forward boom which supports a timber felling chain saw, a log grapple, a delimber which includes a rotor with an axial throat for receiving felled timber, and four circumferentially arranged cutters that are movable at an acute angle relative to the throat to sever limbs from the felled timer, a feed mechanism for drawing the timber through

the delimber, a cut-off saw swingably mounted for movement transverse to the linear feed path to cut the timber into predetermined lengths and a log unloading assembly for palletizing or stacking the cut logs.

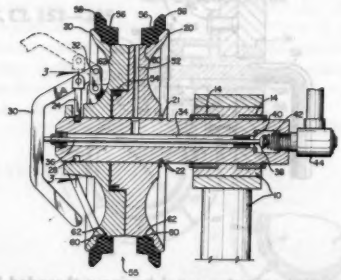
3,683,980
CHAIN STABILIZING CHAIN SAW SPROCKETS
William L. Gasner, Gardena, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Feb. 26, 1971, Ser. No. 119,171
Int. Cl. B27b *17/08*; F16h *55/30*
U.S. Cl. 143—32 R **5 Claims**



A method of supporting a saw chain on a chain saw sprocket wherein saw chain tangs are received in a series of open sided tang receiving recesses of the sprocket and wherein the saw chain is cyclically stabilized by disposing a saw chain tang in a close sided tang receiving recess of the sprocket.

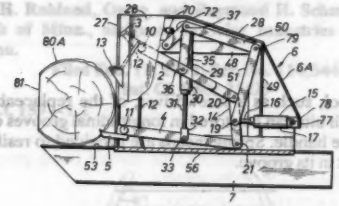
A sprocket apparatus including integrated, open sided and at least partially closed pocket means which interact to concurrently (1) stabilize and center a saw chain on the sprocket so as to minimize or eliminate wave-type vibration in the saw chain, (2) reduce friction between the sprocket and saw chain while effecting stabilization, and (3) facilitate the removal of cuttings from the sprocket while effecting stabilization.

3,683,981
PNEUMATIC TIRE CHUCK
Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak.
Filed July 9, 1970, Ser. No. 53,397
Int. Cl. B25h *5/00*
U.S. Cl. 144—288 A **13 Claims**



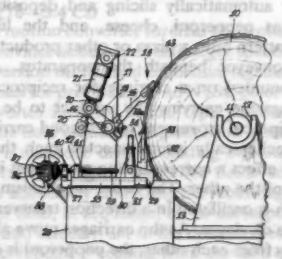
A two-part axially separable chuck for pneumatic tires characterized by a valve system and lock which prevents separation of its parts while a mounted tire thereon is inflated under air pressure. A normally closed safety valve is disposed downstream from a main air supply and exhaust valve which cannot be opened until after the parts are manually locked against separation. After being locked against separation, the parts cannot be manually unlocked until after the tire is deflated by opening the exhaust valve. The main valve system may be in the form of a conventional two position supply and exhaust valve with a single actuator or both the supply and exhaust valves may be operated by separate valve actuators. The safety valve is spring loaded to closed position and is manually moved to open position shortly after locking of the parts occurs. A single operating lever controls movement of the lock and opening of the safety valve. Resilient adapter rings are also employed to accommodate tires of various bead diameters and an adjustment is provided for tires of various widths between the beads.

3,683,982
SAWMILL METHOD
Harold A. Pryor, Woodville, Tex.
Filed July 13, 1970, Ser. No. 54,433
Int. Cl. B27b *1/00*
U.S. Cl. 144—312 **3 Claims**



Sawmill methods are provided including automatic log turning methods in combination with improved non-defacing gripping techniques. A pair of gripping arms engage a log on a headblock at oppositely located points adjacent the vertical portion of the headblock so as to be offset with respect to the center of a log. After a first saw cut, the upper gripping arm is removed and the lower gripping arm is raised to rotate the saw log. In a further aspect of the method, a projecting bumper is provided in the vertical portion of the headblock between the log and the upper released gripping arm to assist in turning the log.

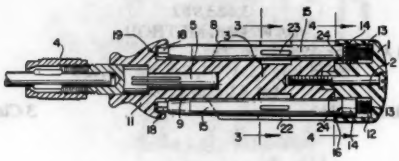
3,683,983
CHIP PRODUCTION AND PLYWOOD VENEER MANUFACTURE
Kenneth C. Logan, Quebec City, Quebec, Canada, assignor to Anglo Paper Products Limited, Quebec City, Quebec, Canada
Filed April 6, 1970, Ser. No. 25,781
Int. Cl. B27l *11/02*, *5/02*
U.S. Cl. 144—326 B **2 Claims**



The invention relates to the production of high quality wood chips as a by-product in the manufacture of plywood veneer. The natural outer layer of a log is chipped until the log has a substantially true cylindrical surface whereby an acceptable

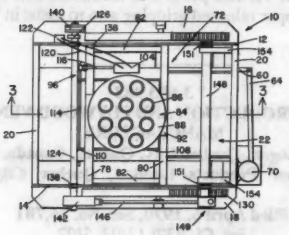
sheet of veneer can be produced therefrom without waste. The chips produced are suitably for pulp production.

3,683,984
SCREW DRIVER HOLDER
John L. Hull, Millville, New Brunswick, Canada
Filed Feb. 12, 1970, Ser. No. 10,753
Int. Cl. B25g 1/08
U.S. Cl. 145—62 5 Claims



A hand tool, such as a screwdriver, of the replaceable bit type, in which bits can be stored in longitudinal grooves on the outside of the handle. Spring means are provided to resiliently hold each bit in its groove.

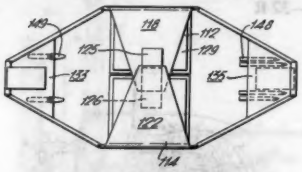
3,683,985
SLICING MACHINE
Albert F. Verhoeven, Grand Rapids, Mich., assignor to Werner Lehara Inc., Grand Rapids, Mich.
Filed March 1, 1971, Ser. No. 119,716
Int. Cl. B26d 4/42, 5/22
U.S. Cl. 146—62 17 Claims



Apparatus for automatically slicing and depositing food products, such as pepperoni, cheese, and the like, in a predetermined pattern onto a pizza or other product which is moving on a conveyor beneath the apparatus. A cutter mechanism is mounted on a carriage for reciprocal movement, and a magazine carrying the product to be sliced is mounted for reciprocal movement on a second carriage. The carriages are mechanically interconnected such that movement of one will effect a corresponding movement in the opposite direction of the other. The cutter mechanism carries a knife edge which is oscillated in a direction transverse to the movement of the carriages. As the carriages move alternately toward and away from each other, the pepperoni is cut as the carriages move toward each other and is deposited on the pizza.

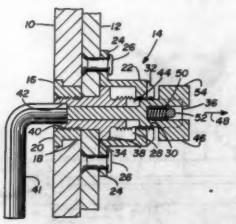
3,683,986
Patent Not Issued For This Number

3,683,987
KNOCK-DOWN FOLDING PACKAGE
Elwood F. Robertson, Suite 01502, 5959 Spring Garden Road, Halifax, Nova Scotia, Canada
Continuation-in-part of Ser. No. 888,511, Dec. 29, 1969, Pat. No. 3,623,526. This application Sept. 8, 1970, Ser. No. 70,041
Claims priority, application Canada, July 28, 1970, 89,356
Int. Cl. B65d 75/14
U.S. Cl. 150—52 R 3 Claims



A flat envelope is provided which is formed from a single blank of flexible light-weight material. The envelope includes a central area and a plurality of flaps (for example, four flaps) extending outwardly from the central area. The flaps may be folded one upon the other to provide a central compartment to hold articles. Means for releasably retaining the flaps in a folded condition are provided associated with the flaps, such means preferably consisting of "VELCRO" coupling members. The inside face of at least one, and preferably all, the flaps, i.e., the face where the active face of the releasable retaining means is provided, is formed with one or more interior, integral article-receiving pockets, suitable, for example, for receiving and holding pens, pencils, etc.

3,683,988
POSITIVE LOCK STRUCTURAL FASTENER
George D. Carter, Fort Worth; Cecil E. Covington, Hurst, and Ernst C. Schellhase, Fort Worth, all of Tex., assignors to Textron Inc., Providence, R.I.
Filed March 3, 1970, Ser. No. 16,111
Int. Cl. F16b 39/02
U.S. Cl. 151—6 6 Claims

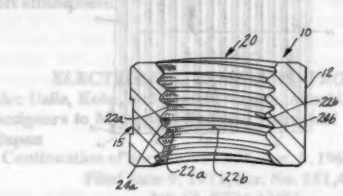


A fastener secures an outer panel having a threaded hole therein to an inner panel by a retainer member on the inner side of the inner panel having a slotted inner end and a channel therethrough. A bolt in the channel has a first threaded outer end portion for engaging the threaded hole in the outer panel, a shoulder facing the inner surface of the inner panel, and a slotted inner end. The bolt extends through a hole in the inner panel. A latch captured in the slotted inner end of the bolt extends through the bolt and engages the slotted inner end of the retainer member to prevent rotation of the bolt.

3,683,989
PREVAILING TORQUE LOCKNUT

Donald W. Follstaedt, Middletown, Ohio, and Richard D. Pinson, Independence, Mo., assignors to Armco Steel Corporation, Middletown, Ohio

Filed March 23, 1970, Ser. No. 21,626
Int. Cl. F16b *39/30*
U.S. Cl. 151—21 B 6 Claims

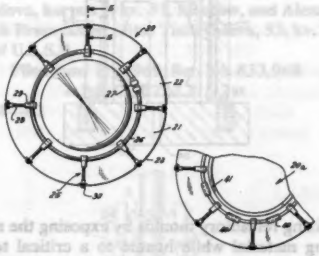


A prevailing torque locknut comprising a polygonal body having base and top ends, a central threaded bore extending from the base end to the top end, at least six longitudinal side walls arranged about the threaded bore, the body having a locking zone longitudinally spaced from the base and top ends sufficiently to provide a plurality of thread turns of normal configuration for free-running initial engagement with a threaded bolt, the locking zone being formed by a single transversely arcuate punched indentation in each of a plurality of alternate side walls of the body, each indentation being of a longitudinal length greater than the pitch of the thread and being of a depth sufficient to displace the thread crests and roots radially inward of the original thread diameter in the area of the thread bore normal to the indentation, the displaced thread roots having a curved configuration in longitudinal section, the displaced thread crests at each side of the displaced, curved threaded roots being longitudinally displaced a distance greater than the original pitch of the thread. The radially inner threads normal to the unindented intervening side walls are displaced radially outward of the original thread diameter when the locknut is deformed by the indentations.

3,683,990
NON-SKID TIRE STRUCTURE

John Detwiler, Manhasset, N.Y., assignor to Chase Manhattan Capital Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 847,965, Aug. 6, 1969, abandoned. This application July 20, 1970, Ser. No. 56,475
Int. Cl. B60c *27/02*
U.S. Cl. 152—225 10 Claims

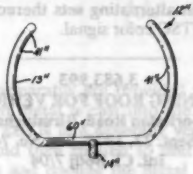


A non-skid tire structure including a tire having a pair of opposed side walls and a peripheral road contacting outer circumferential surface. The outer surface of the tire has a plurality of spaced grooves on its circumference. A deformable non-skid assembly is mounted on the tire. The assembly includes at least one anchor member on the tire and also includes a plurality of non-skid elements with each element having its ends connected to the at least one anchor member. A central portion of each of the elements is normally positioned in a corresponding groove on the circumference of the tire so that when the tire structure is rotating in normal engagement with a road surface, the elements will remain positioned in the grooves and when the tire structure skids on the road surface each element will contact the road surface and will frictionally engage therewith. The assembly will then automatically deform to permit the element to be at least partially displaced from the groove to increase frictional engagement between the road surface and the tire structure and to thereby assist in stopping the skid and returning the tire structure to normal engagement with the road surface. At that time, the assembly will automatically return to its normal configuration and position.

3,683,991
IMPROVED TIRE BEAD SEATER

Felix H. Ruhland, Osseo, and Raymond H. Schmidt, Buffalo, both of Minn., assignors to Solar Industries Inc., Osseo, Minn.

Filed Feb. 11, 1971, Ser. No. 114,544
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.1 8 Claims



An arcuate housing defining a plenum with a valve for attaching a source of air under pressure thereto and jets in communication with said plenum forming a plurality of jets of air and directing the jets of air so they will enter the space between the bead of a tire and the upper rim when the housing is coaxially positioned adjacent the rim. The high velocity jets of air raise the pressure within the tire quickly to a value sufficient to seat the bead on the rim while the jets compose substantially less than a continuous circle.

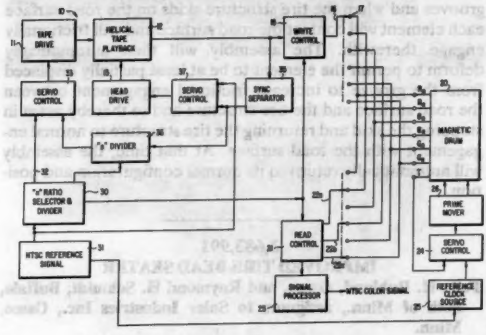
3,683,992
SLOW MOTION CONVERTER FOR FIELD SEQUENTIAL COLOR TELEVISION SIGNALS

Kenneth E. Farr, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1970, Ser. No. 71,093
Int. Cl. H04n *5/78*
U.S. Cl. 178—5.4 CD 11 Claims

A slow motion converter for field sequential color television signals provides selection of an integer speed reduction factor and conversion of the field sequential signals to simultaneous color signals for processing to an NTSC color television signal. The converter includes helical tape playback apparatus for reading the field sequential signals from a magnetic recording tape and a magnetic drum including a plurality of recording heads corresponding to the color fields and write control means for selectively energizing the recording heads to record each color field, in sequence, on its corresponding recording band. A ratio selector, set to the desired speed reduction factor, effects repetitive reading from the tape of each recorded color field signal, and recording of each field sequential signal thus read on its corresponding reading band of the drum. Each previous recording on a given band of a given field signal is erased such that only the last of the repetitively read field signals from the tape remains recorded on its corresponding drum band. As the plurality of odd and even color field

recordings on the drum are updated sequentially, the alternate odd or even set of previously recorded color field signals is simultaneously and repetitively read out from the drum a



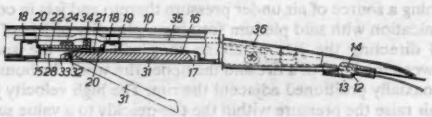
number of times corresponding to the speed reduction factor to provide the slow motion conversion, the simultaneous color field signals read in alternating sets thereof being processed for producing an NTSC color signal.

3,683,993

OPENING ROOF FOR VEHICLE

Joseph Perks, 57 Gorleston Road, Birmingham, 14, England

Filed Sept. 22, 1970, Ser. No. 74,453
Int. Cl. B60j 7/04
U.S. Cl. 160—37 **4 Claims**



In an opening roof for a vehicle a handle for operating locking means is located within a recess in a front sliding cross-chamber of the roof. In an inoperative position the handle is received within the depth of the cross-member. The handle is movable manually about a pivotal connection against the loading of a return spring downwardly into an operative position, whereafter the locking means can be operated.

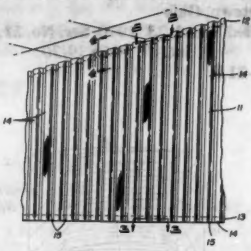
3,683,994

FLEXIBLE WALL-COVERING ATTACHING MEANS

Robert G. Eichenlaub, 49 E. New England Ave., Worthington, Ohio

Filed Dec. 4, 1970, Ser. No. 95,301
Int. Cl. A47h 23/00, 13/14
U.S. Cl. 160—327 **5 Claims**

Means for attaching flexible wall covering to a wall surface to improve its sound-absorbing characteristics as well as its appearance and comprising a longitudinally extending bracket-mounting strip adapted to be attached to the wall and separate brackets having attaching portions interfitting with attaching portions disposed at longitudinally spaced intervals along the strip. The covering, preferably fabric, is adapted to be stretched over the brackets and the brackets, as well as the surfaces on the strip between the brackets are provided with retaining hooks for engaging therewith. The brackets are so shaped that the area of the covering relative to the wall surface is substantially increased and is contoured to be of pleasing appearance and provide hollow cavities behind the cover-



ing which, along with the soft nature of the covering, increases the sound adsorption properties of the wall.

3,683,995

METHOD OF MAKING A COMPOSITE SAND MOLD INCLUDING RECYCLING THE LAND

Lothar Robert Zifferer, 470 Country Club Road, York, Pa.

Filed March 25, 1970, Ser. No. 22,676
Int. Cl. B22c 5/18, 9/12
U.S. Cl. 164—5 **1 Claim**

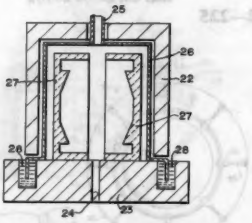
A precision-type composite mold or core for foundry use comprising a body formed from relatively inexpensive coarse sand bonded with sodium silicate cured by reaction with CO_2 and a relatively expensive facing integral with said body and composed of a lesser amount of relatively fine sand than the coarse sand of said body, said fine sand being bonded by a synthetic resin cured by reaction with an amine, at least said coarse sand and sodium silicate bond being recoverable following the use of the mold or core formed therefrom and reconstituted for further use to decrease the overall cost of making and using molds and cores of such type.

3,683,996

METHOD OF CARBONIZING REFRACTORY MOULDS

Adam Dunlop, 23 Manse View Terrace, Douglas, Lenark, Scotland

Continuation-in-part of Ser. No. 744,818, July 15, 1968, abandoned. This application Feb. 26, 1970, Ser. No. 14,644
Int. Cl. B22c 3/00
U.S. Cl. 164—14 **17 Claims**



Carbonizing refractory moulds by exposing the moulds to a carbonizing material while heated to a critical temperature range extending from the minimum temperature required for dissociation of the carbonizing material to a higher temperature which is below the lowest temperature at which the carbonizing material dissociates to form soot. The preferred mould structure is made by forming a slurry containing refractory material, a binder and a gelling agent which is then heated to form a crazed structure. The crazed structure is strengthened by the addition of a further binder and the

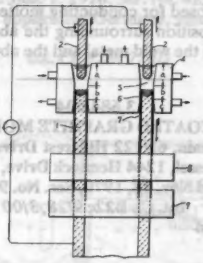
strengthened structure is carbonized. Also disclosed are moulds formed from a mixture of a refractory material and a silicate solution which is hardened by means of carbon dioxide before being impregnated with the pyrolytic graphite. In another embodiment, a phosphoric acid bond is formed in addition to carbonizing by impregnating the mould with a furfuryl alcohol solution containing 2 percent by volume phosphoric acid and then heating to 1000° C. or higher in an inert atmosphere.

3,683,997

ELECTROSLAG REMELTING PROCESS

Akira Uzlie, Kobe, and Junichi Nagata, Akashi, both of Japan, assignors to Metsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,034, Dec. 9, 1968, abandoned.
Filed June 9, 1971, Ser. No. 151,497
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **3 Claims**



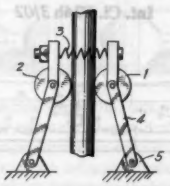
A continuous electro-slag remelting process wherein metal electrodes are fed into a metal mold having the same shape in cross section as the product to be formed, the metal electrodes being melted in an electroslag bath and the molten metal thus obtained being solidified in the metal mold, and continuously drawn out. A large number of wire-shaped and/or plate-shaped metal electrodes are so arranged as to approximate the shape in cross section of the product to be molded.

3,683,998

METHOD FOR WITHDRAWING COPPER INGOTS FROM MOLDS DURING CONTINUOUS CASTING

Alexei Viktorovich Novikov, ulitsa Lenina, 35, kv. 6.; Lev Petrovich Fridman, ulitsa Frunze, 13, kv. 16; Viktor Antonovich Zinkovsky, ulitsa Frunze, 13, kv. 23; Vladimir Ivanovich Denisov, ulitsa Lenina, 37, kv. 29; Konstantin Vitalievich Fisenko, ulitsa Lenina, 60, kv. 8, all of Balkhash Karagandinskoi Oblasti; Vadim Nikolaevich Rattenberg, ulitsa Sedova, korpus 1, kv. 31, Moscow, and Alexandr Alexandrovich Presnyakov, ulitsa Timiryazeva, 53, kv. 27, Alma-Ata, all of U.S.S.R.

Filed June 17, 1969, Ser. No. 833,968
Int. Cl. B22d *11/12*
U.S. Cl. 164—82 **3 Claims**



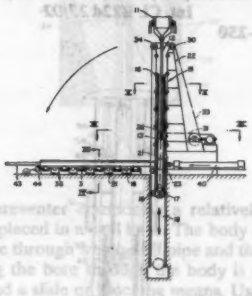
Oxygen-free copper ingots are withdrawn from a mold during continuous casting by applying a contact pressure of from 1 to 3 kg/mm². The contact pressure is applied through surfaces having a smaller modulus of elasticity than the ingots.

3,683,999

PROCESS FOR CASTING METAL WITH VERTICAL POURING AND HORIZONTAL COOLING

Friedrich Kocks, Freiligrathstrasse 1, 4 Dusseldorf, Germany

Filed June 5, 1970, Ser. No. 43,718
Claims priority, application Germany, June 23, 1969, P 19 41 147.3; Aug. 13, 1969, P 19 31 715.8
Int. Cl. B22d *13/00*
U.S. Cl. 164—98 **9 Claims**



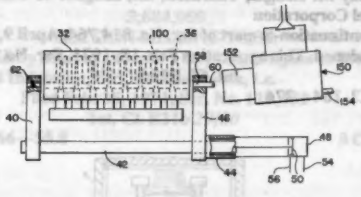
A method and apparatus are provided for casting metals wherein the molten metal is cast into the top of an upright ingot mold whose axis is in a generally vertical position, the mold is capped, and then rotated so that its axis is on the horizontal position and cooling the metal in the mold while holding it with its axis in said horizontal position.

3,684,000

MOLD MAKING DEVICE HAVING BLOW NOZZLE

Walter H. Van Deberg, Berkley, Mich., assignor to Earl A. Thompson Manufacturing Co., Ferndale, Mich.

Filed Aug. 28, 1969, Ser. No. 853,913
Int. Cl. B22c *15/22*
U.S. Cl. 164—200 **11 Claims**



A series of expendable shell molds is formed in a permanent pattern having a series of connected mold cavities. A passage including the cavities extends through the pattern. A swinging blow-vent nozzle is mounted at each end of the passage, the two nozzles being rotationally fixed to each other. In one position the first nozzle blows into the pattern while the second nozzle vents the pattern. In a second position the second nozzle blows into the pattern while the first nozzle vents the pattern. In a third position one of the nozzles blocks the passage while the other has been swung out of the way to provide access for a sand blow box which can then blow sand into the pattern. The nozzles are clamped against the pattern by a hydraulic cylinder which moves them toward each other on a shaft. The device includes means for separating the pattern, lifting the gang of molds out of the pattern and stripping the

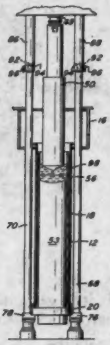
molds from pins on which they are formed or by which they are lifted. The device for elevating the finished molds includes means for blowing out the molds as the patterns are raised. The apparatus is particularly suitable for making cores for making tappet bodies and for making molds for casting engine valves.

3,684,001

ELECTROSLAG FURNACE ELIMINATING MAGNETIC STIRRING EFFECT

Patrick J. Wooding, Moorestown, and Raymond John Roberts, Willingboro, both of N.J., assignors to Consarc Corporation, Rancocas, N.J.

Filed May 11, 1970, Ser. No. 36,147
Int. Cl. B22d 27/02
U.S. Cl. 164—250 **10 Claims**



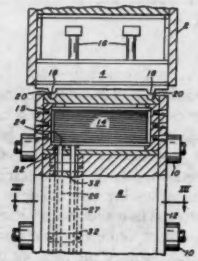
An electroslag furnace is provided with a power connection equivalent to a coaxial conductor to eliminate the deleterious effects of magnetic fields upon the pool of molten metal.

3,684,002

STARTER BAR FOR CONTINUOUS CASTING WITH ELECTROMAGNETICALLY SECURED MOLD STOOL

Anthony M. Longhi, Thornton, Ill., assignor to United States Steel Corporation

Continuation-in-part of Ser. No. 814,764, April 9, 1969, abandoned. This application Feb. 18, 1971, Ser. No. 116,320
Int. Cl. B22d 11/08
U.S. Cl. 164—274 **2 Claims**



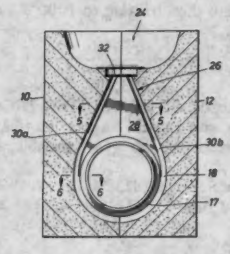
An improved starter bar for continuous casting which is provided with an electromagnet on one end thereof for detachably securing a mold stool to the starter bar.

3,684,003

THERMIT PIPE WELDING MOLD

Charles F. Funk, 33 54th St., Gulfport, Miss.

Filed Jan. 28, 1971, Ser. No. 110,501
Int. Cl. B22c 9/08
U.S. Cl. 164—362 **7 Claims**



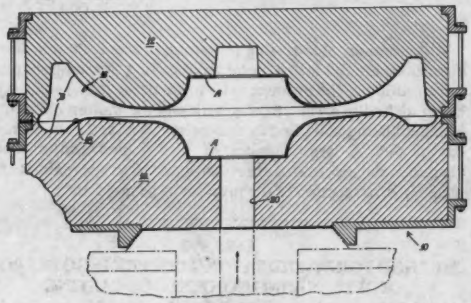
A mold is disclosed for conducting molten weld metal from a crucible to a position surrounding the abutting ends of two pipe joints to fuse the weld metal and the abutting pipe ends.

3,684,004

COATED GRAPHITE MOLD

Andrew G. Germain, 6N122 Hillcrest Drive, Medina, Ill., and William G. Dressel, 1244 Hemlock Drive, Elk Grove, Ill.

Filed Nov. 18, 1970, Ser. No. 90,747
Int. Cl. B22c 9/28, 3/00
U.S. Cl. 164—364 **2 Claims**



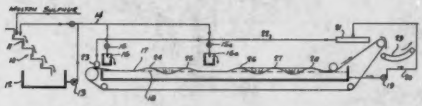
A coating for the casting surfaces of a generally circular graphite mold, the coating thickness varying inversely as the distance from the centerline of the mold.

3,684,005

METHOD AND APPARATUS FOR THE SOLIDIFICATION OF MOLTEN SULPHUR

Ernest Ellithorpe, and Ronald B. Fletcher, both of Calgary, Alberta, Canada, assignors to Sulform Limited

Filed April 21, 1970, Ser. No. 30,558
Claims priority, application Canada, Nov. 21, 1969, 068,054
Int. Cl. F24h 3/02
U.S. Cl. 165—1 **11 Claims**



A method and apparatus for the solidification of molten sulphur involves feeding a layer of molten sulphur onto the

normally upper surface of a movable member such as a belt. The belt is provided with a surface to which is applied a thin layer of water which inhibits the adherence of solidified or partly solidified sulphur thereto during the cooling and solidification stages. One method of cooling the sulphur is accomplished by tilting the surface of the movable member at selected points along its length so as to cause the molten sulphur to flow transversely from one side of the surface to the other. Another cooling and solidifying method involves dipping or sequential dipping of the sulphur layer into a bath or series of baths of water arranged along the surface of the movable belt. A lamination of sulphur layers may also be formed by the application of overlapping layers on the initial layer.

3,684,006

PISTON CHECK VALVE

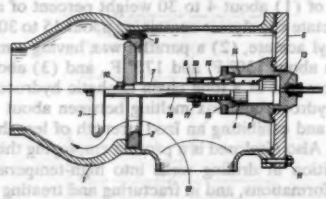
Walter Spahn, c/o Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed June 1, 1970, Ser. No. 42,276

Claims priority, application Germany, June 3, 1969, P 19 28 180.2

Int. Cl. F28f 27/02

U.S. Cl. 165—97 **4 Claims**



A check valve includes a valve housing having a valve cover, a valve seat and spring loaded valve diaphragm with a valve spindle, and base for the valve spindle. The free end of the spindle is made in the form of a piston and the valve spindle cover is in the form of a cylinder through which a blast of control gas enters.

3,684,007

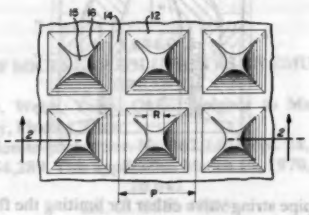
COMPOSITE STRUCTURE FOR BOILING LIQUIDS AND ITS FORMATION

Elias George Ragi, East Amherst, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,387

Int. Cl. F28f 13/00

U.S. Cl. 165—133 **16 Claims**



A composite metal structure for boiling liquids comprising a smooth surface metal substrate and a cover sheet bonded to the substrate with sub-surface cavities and spaced restricted openings extending through the cover sheet being joined to the cavities.

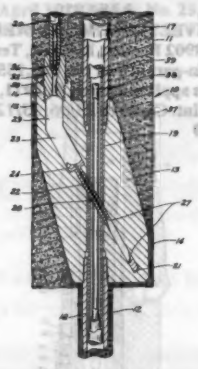
3,684,008

WELL BORE BLOCKING MEANS AND METHOD

Henry U. Garrett, 2205 Lee, Houston, Tex.

Filed July 16, 1970, Ser. No. 55,439

U.S. Cl. 166—55 **10 Claims**



A blow-out preventer comprising a relatively large body means which is placed in a well bore. The body means is provided with a bore through which drill pipe and the like can extend. Traversing the bore through the body is a slideway in which is mounted a slide or blocking means. Using a suitable means of propulsion, the slide or blocking means can be moved from a position from within the slideway of non-engagement with the bore extending through the body to a position where the slide completely intersects or blocks the bore in the body. The propulsion means can be activated automatically or manually from the surface or automatically from below the surface. When the blowout preventer is used in well bores wherein drill strings or production tubing extend through the body, the apparatus is provided with a severing means which first acts to sever the pipe extending through the bore at which point the slide or blocking means is forced through the space between the severed end to completely seal off the well bore. In cases where no drill pipe or the like extends through the bore of the body means, the severing means can be dispensed with and the well bore blocked off simply by propelling the slide into the closed position, i.e. intersecting the bore.

3,684,009

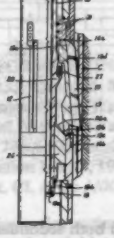
SECTION MILLING TOOL

William Kirby Murray, Bossier City, La., assignor to Tri-State Oil Tool Industries, Inc., Bossier Parish, La.

Filed Feb. 25, 1971, Ser. No. 118,652

Int. Cl. E21b 29/00

U.S. Cl. 166—55.8 **5 Claims**



A section milling tool including a body and cutters which are actuated in a predetermined sequence whereby one end is

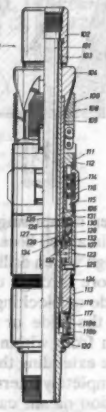
first moved outward to engage and cut an opening in a casing, after which the other end is moved outward to position the cutters within the opening so that substantially their entire length is made available for milling the casing.

3,684,010

SELECTIVELY-ANCHORED WELL TOOLS

David E. Young, 8902 Pontiac, Houston, Tex.

Continuation-in-part of Ser. No. 885,155, Dec. 15, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,527
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—129 27 Claims



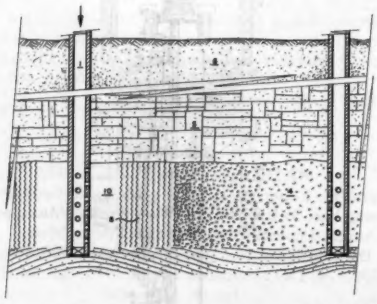
In each of the representative embodiments of the present invention disclosed herein, a retrievable well tooth is arranged to include a body member, slip means operated by a downwardly movable expander for anchoring the body member against movement in a well conduit, and mechanical means responsive to upwardly-acting forces on said body member for imposing downwardly-acting forces on the expander to retain the slips in anchoring engagement with the well conduit.

3,684,011

MOBILITY CONTROL BY PARTIAL PLUGGING OF FORMATIONS

C. Travis Presley, 6891 S. Prince Circle, Littleton, Colo., and Perry A. Argabright, RR-1 Perry Park Ranch, Sedalia, Colo.

Filed Nov. 16, 1970, Ser. No. 89,883
Int. Cl. E21b *43/22*
U.S. Cl. 166—270 10 Claims



Mobility control in both secondary and tertiary subterranean oil recovery processes is improved by reducing the permeability of the reservoir through injecting an aqueous solution containing salts of isocyanuric acid, (optionally also containing thickening agents), which undergoes chemical change in the reservoir to form a precipitate and thereafter displacing such aqueous solutions through the formation by injecting drive fluids. Reduction in permeability is controlled by pH, reservoir temperature, and concentration of the isocyanuric salt. Preferably, the aqueous solution is displaced a distance away from the well bore by injection of the drive fluids before precipitation occurs. Preferably the aqueous solution is preceded by a slug of controlled mobility displacing fluid, most preferably by a miscible or miscible-type displacing fluid.

3,684,012

METHOD AND COMPOSITION FOR TREATING HIGH-TEMPERATURE SUBTERRANEAN FORMATIONS

John W. Scheffel, 548 N. Mountain View, Fullerton, Calif.; Paul W. Fischer, 11751 E. Beverly Blvd., Whittier, Calif., and Ethan R. Schmidt, 231 So. Valencia, La Habra, Calif.

Filed June 12, 1970, Ser. No. 45,917
Int. Cl. C08f *21/04, 45/52;* E21b *33/138*
U.S. Cl. 166—283 36 Claims

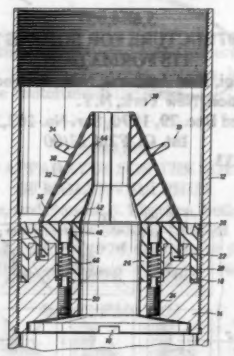
A water-insoluble particulate composition have controlled slow oil-solubility at elevated temperatures is disclosed. The composition is comprised of solid particles of a homogeneous mixture of (1) about 4 to 30 weight percent of an ethylene-vinyl acetate copolymer containing about 15 to 30 weight percent vinyl acetate, (2) a paraffin wax having a melting point between about 130° F. and 175° F., and (3) about 10 to 25 weight percent of a long chain aliphatic hydrocarbon or oxidized hydrocarbon wax melting between about 195° F. and 250° F. and exhibiting an Izod strength of less than 0.9 foot-pounds. Also disclosed is a process employing this particulate composition in drilling wells into high-temperature subterranean formations, and in fracturing and treating such formations.

3,684,013

WELL PIPE STRING VALVE

Henry C. Brown, Odessa, Tex., assignor to Brown Well Service & Supply Company, Odessa, Tex.

Filed Jan. 19, 1971, Ser. No. 107,784
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 10 Claims



A well pipe string valve either for limiting the fluid flow rate downwardly, in which case a pressure pulse may be created within the pipe string, or for preventing any flow in an upward direction, in which case the valve serves the same purpose as a conventional one-way check valve. In the former mode, a plurality of discrete congruent sections forming an upwardly pointing cone are secured across the pipe string and pivotally mounted as the bases thereof, being resiliently biased away

from one another in an open position. As the downward flow rate increases, the sections engage one another to form the cone shape, assuming the valve closed position; and a pressure pulse may be created within the pipe string above the valve although a pressure stabilizing orifice is provided through the cone so that a small amount of fluid will continually bleed past the valve. Essentially the same arrangement is used as the back flow check valve except that the cone is inverted, no orifice is provided therethrough, and the cone sections are resiliently biased toward the closed position

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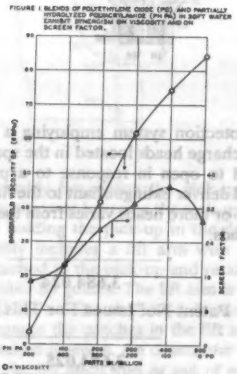
3,684,014

POLYACRYLAMIDE-POLYALKENEOXIDE MOBILITY CONTROL PROCESS

Charles J. Norton, 766 Marion, Denver, Colo., and David O. Falk, 3284 S. Winona Court, Denver, Colo.

Filed Oct. 29, 1970, Ser. No. 85,064
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **14 Claims**



Improved viscosity, resistance factors, and mobility control of aqueous polyelectrolyte solutions are obtained by incorporating synergistic amounts of polymers containing nonpolyelectrolyte, example of such a solution is 400 ppm of partially hydrolyzed polyacrylamide and 100 ppm of polyethylene oxides.

3,684,015

USE OF MICELLAR SOLUTION AS AN EMULSION BREAKER

Thomas O. Webb, Tulsa, Okla., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 762,140, Sept. 24, 1968, Pat. No. 3,554,289. This application March 16, 1970, Ser. No. 20,042
Int. Cl. E21b *43/25*
U.S. Cl. 166—305 R **2 Claims**

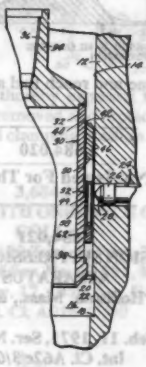
Production of formation fluids through a well bore from a hydrocarbon-bearing subterranean formation having a water and hydrocarbon emulsion blockage surrounding the well bore is restored by injecting about 1 to about 500 gallons per vertical foot of hydrocarbon-bearing formation of micellar dispersion into the formation to "solubilize" the emulsion.

3,684,016

METHOD AND APPARATUS FOR INSTALLING AN INSERTABLE HANGER SHOULDER RING IN A WELLHEAD

John L. Hull, and Charles D. Bridges, both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed April 3, 1970, Ser. No. 25,537
Int. Cl. E21b *23/04, 43/10*
U.S. Cl. 166—315 **5 Claims**



A split ring is provided for insertion in a wellhead body to provide a substantial shoulder therein upon which a casing or tubing hanger, or a series of hangers, may be supported. The wellhead body is provided with a groove to receive the ring. The ring is inserted independently of the hangers and several designs of insertion tool are disclosed.

3,684,017

Patent Not Issued For This Number

3,684,018

FOAM-FORMING FLAME-EXTINGUISHING COMPOSITIONS CONTAINING ALKYLPOLYALKOXYSULFATES, POLYOXYETHYLENE RESIN AND SYMMETRICAL DIBROMOTETRAFLUOROETHANE

Nicolino Rainaldi, 6, Via Porte Nuove-Mestre, and Pieriuigi Fatutto, 2091, Via Dorso Duro, both of Venezia, Italy

Continuation-in-part of Ser. No. 827,959, May 26, 1969, Pat. No. 3,609,074, and a continuation-in-part of Ser. No. 83,603, Oct. 23, 1970. This application Jan. 25, 1971, Ser. No. 109,620
Claims priority, application Italy, Jan. 27, 1970, 19827 A/70; Jan. 29, 1970, 19921 A/70
Int. Cl. A62d *1/00*
U.S. Cl. 169—1 A **6 Claims**

A foam-forming flame-extinguishing composition containing an aqueous solution of a water soluble alkylpolyalkoxysulfates, preferably in combination with a polyoxyethylene resin and advantageously, with symmetrical-dibromotetrafluoroethane.

3,684,019

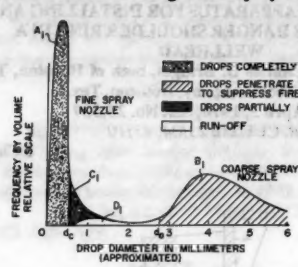
METHOD FOR FIGHTING A FIRE

Howard W. Emmons, 233 Concord Road, Sudbury, Mass.; Cheng Yao, 39 Drabbington Way, Weston, Mass., and James B. Smith, 3 Locust Road, Wellesley Farms, Mass.

Division of Ser. No. 786,659, Dec. 24, 1968, Pat. No. 3,590,924. This application May 7, 1971, Ser. No. 141,332
Int. Cl. A62c *1/00*
U.S. Cl. 169—1 A **12 Claims**

A method for dispersing a fire extinguishant in which dual nozzles are employed in each sprinkler head to form separate-

ly a fine mist for cooling and a spray of coarse droplets to



penetrate a fire plume and reach fuel surfaces to extinguish a fire.

3,684,020

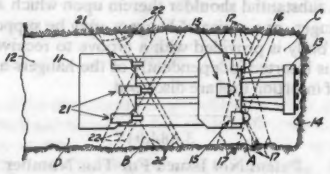
Patent Not Issued For This Number

3,684,021

MINE EXPLOSION SUPPRESSION METHOD AND APPARATUS

Edward J. Poitras, Holliston, Mass., assignor to Fenwal, Inc., Ashland, Mass.

Filed Feb. 11, 1971, Ser. No. 114,608
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **19 Claims**



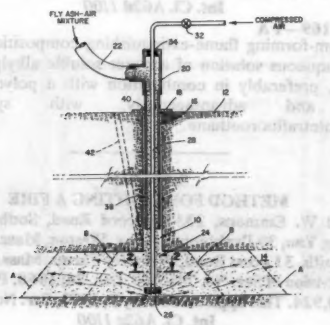
A method and apparatus that ignores possibly harmless radiant energy sources such as flames or sparks that occur directly adjacent the working face in a mine tunnel but detects and suppresses potentially dangerous flame fronts moving through the tunnel away from the face.

3,684,022

APPARATUS AND METHOD FOR INJECTION AND DISSEMINATION OF DRY FLY ASH IN MINE VOIDS

Carl A. Peterson, 153 W. Maple Ave., Hershey, Dauphin, Pa.

Filed July 21, 1971, Ser. No. 164,689
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **12 Claims**



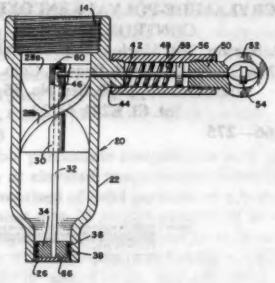
A supplemental source of compressed air is introduced near the discharge end of a conduit introducing air entrained dry fly ash into a mine void, to maintain the free flow characteristic of a fly ash mixture for a greater time and distance than would be the case without such introduction of supplemental air. A diffuser is used to disseminate the supplemental air into a plurality of streams.

3,684,023

FIRE PROTECTION SYSTEM WITH A VARIABLE PRESSURE FLOOR

Carol Z. Champagne, Rockland, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed June 8, 1971, Ser. No. 151,014
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **13 Claims**



A fire protection system employing a plurality of extinguishant discharge heads located in the space to be protected and adapted to open in response to a predetermined fluid pressure and deliver extinguishant to the fire. The pressure for opening one or more heads varies from the pressure for opening other heads.

3,684,024

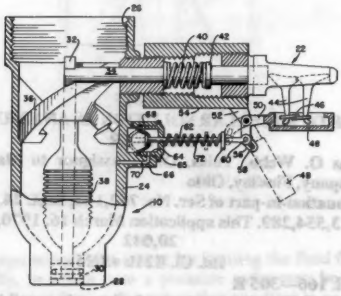
Patent Not Issued For This Number

3,684,025

ADAPTIVE SPRINKLER HEAD

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston, Mass.

Continuation of Ser. No. 885,501, Dec. 16, 1969, abandoned.
This application July 26, 1971, Ser. No. 166,296
Int. Cl. A62c *37/08*
U.S. Cl. 169—37 **18 Claims**



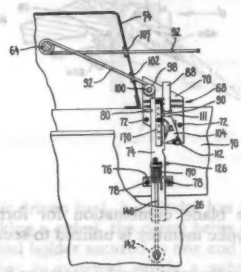
A sprinkler head for fixed fire extinguishing systems of the type in which a fluid extinguishant is supplied under line pressure to a plurality of such heads, in which the actuation of the head in response to fire is inhibited when line pressure drops

below a predetermined magnitude, thereby to preserve the ability of already actuated heads in the system to disperse extinguishant on a fire. In one embodiment, a movable heat shield is employed together with line pressure responsive means for controlling the position of the heat shield with respect to the sprinkler head fuse. In another embodiment, a pressure responsive valve is employed to permit passage of extinguishant through a bleed conduit directly to the fuse thereby to effect cooling thereof.

3,684,026
BALER PICK-UP LIFT ASSEMBLY

Floyd W. Reuter, Dearborn Heights, and Frank T. Herrick, Pontiac, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 13, 1971, Ser. No. 171,603
Int. Cl. A01f *15/04*
U.S. Cl. 56—341 **7 Claims**



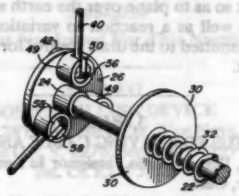
A pick-up lift assembly for raising the pick-up for a hay baler to a transport position or lowering the pick-up to a working position and for holding the pick-up in the desired position. The lift assembly includes a lift arm with a series of notches pivotally attached to the pick-up and retained on the side of the bale chamber by guides. The lift arm is raised by a rope which is pulled by a drive shaft that forms a capstan drive. A lift latch engages the notches in the lift arm to hold the pick-up in the desired position. An overcenter coil spring is connected to bias the lift latch into or out of engagement with the notches. Upon raising the pick-up with the rope from the transport position, a first cam on the lift arm contacts a first cam surface on the upper portion of the lift latch and cams the latch until the coil spring is moved past center and biases the lift latch away from the notches. The pick-up and lift arm can then be lowered until a second cam contacts a second cam surface on the lift latch and cams the latch until the coil spring is moved past center and biases the lift latch toward the notches. The lift latch then engages one of the notches preventing further lowering of the lift arm and holding the pick-up in a working position. The second cam is adjustable relative to the notches to adjust the working position. The lift arm is attached to the pick-up by a linkage assembly which includes a lost motion connection and a spring which assist the pick-up to float up over obstructions.

3,684,027
GRASS EDGER

Howard H. Crawford, c/o Blair-Hall Co., Inc., 206 Reynolds, El Paso, Tex.

Filed May 1, 1970, Ser. No. 33,591
Int. Cl. A01b *45/100*
U.S. Cl. 172—15 **6 Claims**

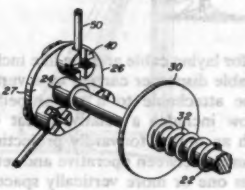
A grass cutting head having a driving shaft mounting axially spaced flange and plate components. Angularly spaced collars are rotatably supported from one side of the flange. A plurality of radially extending nails, serving as cutting bars, are axially removably received in the ends of the collars remote from the plate. An axially mounted coil spring forces the plate component into clamping engagement with the ends of collars remote from the plate so that the nails are retained in the collars. By pulling the plate against the spring, the plate is moved away from the collars thereby exposing the nails. Once exposed, the nails can be removed and replaced. Then, the plate is replaced to its original clamping position.



3,684,028
GRASS EDGER WITH ONE-PIECE CUTTER BAR COLLAR

Howard H. Crawford, 1100 Zuni, El Paso, Tex.

Continuation-in-part of Ser. No. 33,591, May 1, 1970. This application Nov. 17, 1970, Ser. No. 90,329
Int. Cl. A01b *45/00*
U.S. Cl. 172—15 **11 Claims**

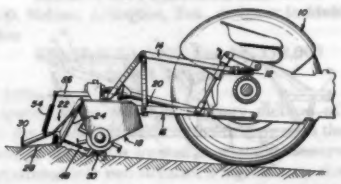


A grass cutting head having a driving shaft mounting axially spaced flange and plate components. Angularly spaced collars re rotatably supported between the flange and plate components. Each collar is fabricated from a single unit having a slotted head portion and an integrally connected shank portion which is received in a corresponding aperture in the flange component. A radially extending nail is received in the slotted portion of each collar. The nail serves as a cutting bar and is maintained in the slotted portion by the plate component which is removably positioned against the slotted portion of the collar. The nails may be replaced by moving the plate component away from the slotted portion of the collar.

3,684,029
DEPTH CONTROL SKID FOR LAND WORKING MACHINE

John R. Clover, 270 S. 3rd West, Lehi, Utah

Filed Aug. 13, 1970, Ser. No. 63,521
Int. Cl. A01b *63/114*
U.S. Cl. 172—239 **2 Claims**



A depth control skid for utilization on a soil working implement mounted on and operative from a tractor incorporating

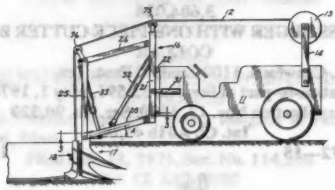
an automatic hydraulic draft control operative in response to the tensioning or compressing of the top link of a three point hitch. The skid pivotally mounts on the implement and trails therebehind. An adjustable chain fixes the skid relative to the implement so as to set the penetration depth, the skid trailing the implement so as to plane over the earth and effect a leveling thereof as well as a reaction to variations in the ground which are transmitted to the draft control for an adjustment of the implement.

3,684,030

APPARATUS FOR LAYING CABLE AND THE LIKE

Frank Lucero, Denver, Colo., assignor to Lee Way Trenching, Inc., Denver, Colo.

Filed June 1, 1970, Ser. No. 42,233
Int. Cl. A01b *13/08*; B63b *35/04*
U.S. Cl. 172—700 **10 Claims**



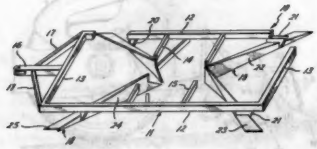
Apparatus for laying cable and the like includes a trenching plow and a cable dispenser carried by a vertically adjustable support frame attachable to a self-propelled vehicle. The trenching plow includes a relatively flat blade body surmounted with an upper, forwardly projecting pivot arm for pivotal movement between operative and retracted positions. The blade has one or more vertically spaced forwardly and downwardly projecting teeth with each successively lower blade tooth being rearwardly and downwardly stepped relative to the one above. Each blade tooth has a front cutting edge and relatively narrow elongated lateral blade sections projecting outwardly from opposite sides of the blade body, the lateral blade sections being arranged with top and bottom faces on a front segment which progressively increases in slope along a curve extending rearwardly of a forward cutting edge and a rear segment extends rearwardly on a straight incline to provide a clearance angle under the blade sections to reduce drag and pull the vehicle down against the soil to increase traction while progressively lifting the soil vertically. One or more cables are laid in a trench formed by the trenching plow by the cable dispenser having a hinged side wall for lateral insertion of the cable.

3,684,031

LAND SMOOTHER

Eldon J. Reynolds, Austin, Tex., assignor to Reynolds Research & Manufacturing Corporation, McAllen, Tex.

Filed Aug. 4, 1970, Ser. No. 60,786
Int. Cl. A01b *35/20*; E02f *3/12*
U.S. Cl. 172—686 **6 Claims**



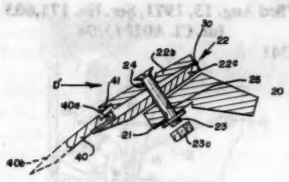
A land smoother having an angled blade with a horizontal capping surface which extends forwardly from the upper edge of a vertical cutting surface. The height of the cutting surface decreases gradually from a maximum at the forward end of the blade to substantially a vanishing point at its rearward end.

3,684,032

REPLACEABLE BLADE COMBINATION FOR CHISEL BLADE

Roy I. Hawkins, Pierce, Colo., assignor to Hawkins Mfg., Inc., Pierce, Colo.

Continuation-in-part of Ser. No. 752,017, Aug. 9, 1968, Pat. No. 3,556,229. This application Jan. 2, 1970, Ser. No. 155
Int. Cl. A01b *39/18*
U.S. Cl. 172—720 **4 Claims**



A replaceable blade combination for forming plows in which a matrix yoke member is utilized to secure the placeable blade.

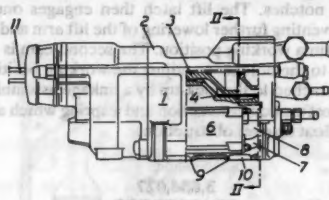
In a first embodiment the yoke member is normally held apart by a plurality of spot-weld hinges and in a second embodiment a plurality of finger hinges on the upper member of the yoke engage the adjacent edge of the lower member of the yoke.

3,684,033

INDEPENDENTLY ROTATED PNEUMATIC ROCK DRILL

Erik Johan Victor Ahlberg; Gosta Berhard Ekwall, both of Nacka, and Rolf Artur Ronald Lindquist, Tumba, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation-in-part of Ser. No. 77,233, Oct. 1, 1970. This application June 25, 1971, Ser. No. 156,775
Int. Cl. B25d *9/00*
U.S. Cl. 173—105 **5 Claims**



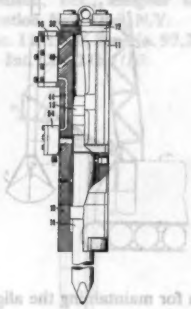
An independently rotated, muffled pneumatic rock drill comprising an impact mechanism housing in which an impact mechanism and a rotation motor are located and in which housing also is enclosed an air volume into which the exhaust air from both the impact mechanism and the rotation motor is discharged. The housing comprises at least two separable parts, one of which is a detachable cover surrounding the rotation motor.

3,684,034

IMPACT AIR DRIVEN TOOL

Hiromu Terada, Ikoma, Japan, assignor to Nippon Pneumatic Manufacturing Company Limited, Osaka City, Osaka Prefecture, Japan

Filed May 21, 1970, Ser. No. 39,390
Claims priority, application Japan, Feb. 19, 1970, 45/14404; Feb. 19, 1970, 45/14405
Int. Cl. E21b 1/00; B25d 9/00
U.S. Cl. 173—137 2 Claims



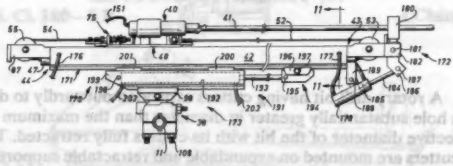
An impact air driven tool. A cylinder has a piston slidable therein for striking a chisel, the chisel being operatively supported by a chisel holder secured to one end of said cylinder. A valve member is mounted within a valve casing and is reciprocated within said casing by piston operating air supplied into an upper cylinder cavity above the uppermost end surface of the piston and a lower cylinder cavity beneath the lowermost end surface of the piston. A limiting valve is provided and is operated by a variation of the amount of air within said cylinder for change-over of supply of said piston operating air to said valve member. A throttle valve is disposed in an intermediate portion of a passage through which compressed air for shifting the valve member from the advanced position to the original position is supplied from the limiting valve to the valve member. The throttle valve controls the flow of air to the valve member and thereby adjusts the duration of the piston resting phase during which the valve member is shifted.

3,684,035

CABLE CYLINDERS

MacGordon Wills, R.R. 2, Chelmsford, Ontario, Canada

Filed April 24, 1970, Ser. No. 31,718
Int. Cl. B23g 5/00; E21c 5/10
U.S. Cl. 173—147 8 Claims



A cable cylinder particularly suited for use in a rock drill guiding and supporting structure comprises an elongated member having a cylindrical bore extending therethrough. A carriage on which a rock drill, for example, may be detachably mounted, is guidedly supported on the outside of the elongated member and connected by cables to a piston disposed within the bore, such cables extending around pulleys at each end of the elongated member. Hoses serve to supply air under pressure to the bore on a desired side of the piston to cause longitudinal movement of that piston within the bore and consequently longitudinal movement in the opposite direction of the carriage and of a rock drill supported thereon.

3,684,036

Patent Not Issued For This Number

3,684,037

SONIC DRILLING DEVICE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Filed Oct. 5, 1970, Ser. No. 77,857
Int. Cl. E21c 3/08
U.S. Cl. 175—56 5 Claims

A sonic drive unit including an orbiting mass oscillator for generating vibratory energy which is driven through a torsionally stiff rotary drive shaft by an engine contained within the unit is supported for vertical motion. The drive unit has an elastically vibratory column extending vertically downward from the bottom thereof, the column having a drill bit as its end for drilling into earthen material. The drive unit includes an air spring structure which provides vibration isolation of the vibratory energy of the supper end of said column from the support and from the drive engine; and which air spring also affords self-centering, with variations in downward loading, that automatically achieves accurate control of the drill bit bias pressure during drilling. Sonic vibratory energy is transferred from the oscillator to the column and drill bit to implement the drilling operation as the drive unit, by virtue of its weight force, biases the drill against the earthen material being drilled.

3,684,038

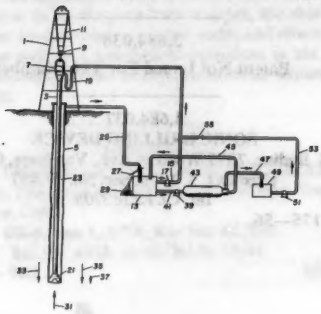
BALANCED PRESSURE DRILLING

Murrell D. Nelson, Arlington, Tex., assignor to Mobil Oil Corporation

Filed Feb. 23, 1971, Ser. No. 118,003
Int. Cl. E21b 21/04
U.S. Cl. 175—66 4 Claims

This specification discloses a rotary method of drilling a well into the earth. A portion of the drilling mud that is circulated through the well is treated at selected times, which portion is separated into two streams, a high density slurry stream containing a heavy solids phase, and a low density effluent stream containing a light solids phase. The effluent stream is recombined into the drilling mud and the high density slurry

stream is stored, thereby decreasing the density of the drilling mud circulated through the well. At other selected times the



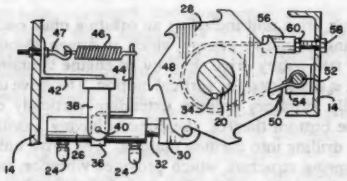
high density slurry is flowed into the drilling mud to increase the density thereof.

3,684,039

DRILL ROD INDEXING DEVICE

Francis P. Coyne, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,785
Int. Cl. E21b *19/00*
U.S. Cl. 175—85 **15 Claims**



A toothed ratchet wheel assembly fixed to the rotary shaft of a lazy-susan-type rod changer and storage unit which is selectively rotated by a fluid-powered cylinder and reciprocating piston rod. The end of the rod has a pawl fixed thereto which engages successive ratchet wheel teeth, with actuation of the cylinder, to position successively stored drill rods.

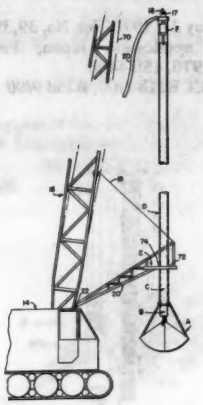
3,684,040

APPARATUS FOR ACTUATING CLAM SHELL BUCKET

Russel L. Heacox, Santa Rosa, Calif., assignor to P & Z Co., Inc., South San Francisco, Calif.

Filed June 24, 1970, Ser. No. 49,469
Int. Cl. E21b *9/32*
U.S. Cl. 175—202 **4 Claims**

An improved clam shell digging apparatus is disclosed for digging deep rectilinear trenches in earth when raised and lowered by a crane or other lifting apparatus. The clam shell bucket is dependingly suspended from the top of the crane by inner and outer concentric pipes. A hydraulic cylinder at the top of the pipes causes relative movement between the inner and outer concentric pipes and opens and closes the clam shell bucket. The digging apparatus includes an improved bearing for preventing frictional wear between the inner and outer pipes when the bucket is opened and closed, an improved mounting of the bucket to the bottom of the inner and outer concentric pipes to prevent detachment of the bucket when it closes upon solid objects encountered in the earth; and an im-



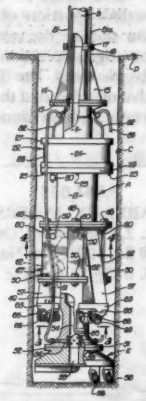
proved platform for maintaining the alignment of the bucket with respect to the crane.

3,684,041

EXPANSIBLE ROTARY DRILL BIT

Archer W. Kammerer, Jr., Fullerton, and Gary R. Johnson, Anaheim, both of Calif., assignors to Baker Oil Tools, Inc., City of Commerce, Calif.

Filed Nov. 16, 1970, Ser. No. 89,606
Int. Cl. F21b *9/26*
U.S. Cl. 175—267 **29 Claims**



A rotary drill bit having cutters expanded outwardly to drill a hole substantially greater in diameter than the maximum effective diameter of the bit with its cutters fully retracted. The cutters are mounted on expandable and retractable supporting members spaced circumferentially around the bit, each supporting member having a cluster of cutters mounted thereon, the cutters in each cluster being circumferentially or radially spaced from each other, the cutters collectively cutting upon a formation shoulder in non-tracking relation. The tool is locked hydraulically with its cutters in a retracted position, and is unlocked to permit expansion of the cutters by fluid pressure. Air circulated down the outside of the tool aerates a liquid column within the tool and in the drill pipe connected to

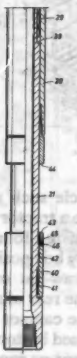
the tool, causing the greater hydrostatic head of fluid externally of the bit and drill pipe to flow across the bottom of the hole toward its axis to flush the hole bottom of cuttings, clean and cool the cutters, and carry the cuttings through the tool and drill pipe to a suitable discharge point above the top of the hole.

3,684,042

WELL JAR WITH EXTERNALLY OPERABLE TRIP RELEASE

Jerry C. Graff, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,216
Int. Cl. E21b 1/10
U.S. Cl. 175—302 **5 Claims**



A well jar having telescoping members movable between extended and retracted positions, a tripping mechanism for releasably retaining said members in retracted position, and means operable at the surface for releasing said tripping mechanism so that the jar is run into a well with said members in an extended position.

ERRATUM

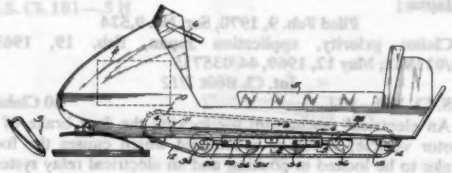
For Class 178—5.4 CD see:
Patent No. 3,683,992

3,684,043

SNOWMOBILE HAVING ARTICULATED BOGEY WHEEL SUSPENSION MEANS

Roger D. Hirsch, Milwaukee, Wis., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed March 19, 1970, Ser. No. 20,938
Int. Cl. B62d 55/16; B62m 27/02
U.S. Cl. 180—5 R **1 Claim**



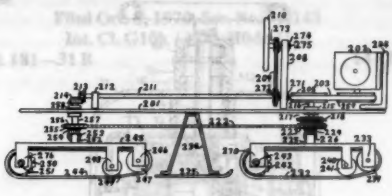
A snowmobile having a flexible endless belt which is driven to engage the ground and propel the snowmobile over the ground, and articulated bogey wheel suspension means for said belt whereby suspends means suspends the snowmobile on the lower run of the belt and holds the belt in driving contact with the ground. The suspension means is articulated so as to accommodate undulating ground over which the snowmobile traverses.

3,684,044

QUADRILATERAL VEHICLE

Thomas A. Watson, 2720 Goyer Apt. 24, Montreal, 251, Quebec, Canada

Filed April 27, 1970, Ser. No. 32,136
Int. Cl. B62m 27/02; B62d 11/20
U.S. Cl. 180—5 R **1 Claim**



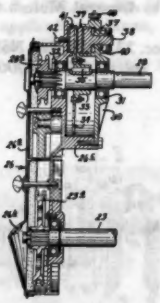
In a vehicle having a single front and rear mounted driven and steerable wheel or track, 360° steering is possible by applying drive about its steering axes. The torque developed by this drive is balanced out in the steering system, hence preventing the vehicle from being difficult to steer in one direction and easy in the other direction. This vehicle is capable of turning about its own center and requires no differential. The system is particularly adaptable to a small snowmobile and will greatly enhance its steering, traction and braking characteristics. Two centrally mounted skis are placed on the vehicle in a quadrilateral fashion to provide lateral stability.

3,684,045

INTEGRAL DISK BRAKE APPARATUS FOR SNOWMOBILES

Donald G. Samuelson, Anoka, Minn., assignor to Textron, Inc., Providence, R.I.

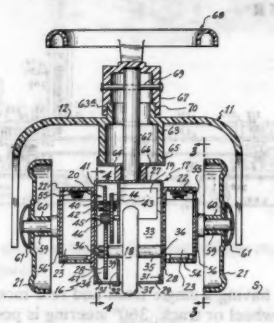
Filed Feb. 12, 1971, Ser. No. 114,812
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R **8 Claims**



A snowmobile is shown having a chain case housing unit mounted between the engine and the drive track. The housing unit carries a driven shaft engaged for common rotation with the drive track. A braking disk is mounted on the shaft. A manually adjustable brake pad is mounted on one side of the disk and a fluid piston operated brake pad is mounted on the other side. Manually operable pump means are mounted on the handlebars to actuate the piston. Major portions of the

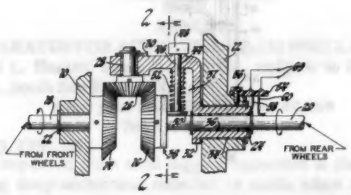
braking unit are integrally formed with the chain case housing unit.

3,684,046
TOY VEHICLE WITH STEERABLE DRIVE ASSEMBLY
Manny Begleiter, 2824 Morris Ave., Bronx, N.Y.
Filed Oct. 1, 1970, Ser. No. 77,227
Int. Cl. B62d *61/08*
U.S. Cl. 180—26 R **2 Claims**



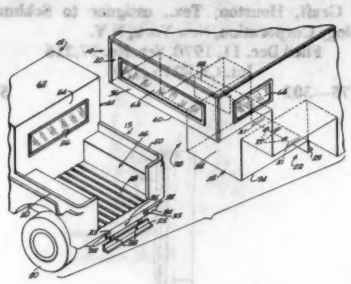
A toy vehicle to be ridden by a child has a body to be straddled by the rider, a pair of freely rotatable rear wheels, and a steerable unitary drive assembly that comprises a frame turnably mounted at the front of the body, a single drive wheel rotatably mounted within the frame and driven through reduction gearing by an electric motor also mounted within the frame and powered by batteries preferably held in casings mounted at the opposite sides of the turnable frame, and a pair of freely rotatable outrigger wheels mounted at opposite sides of the frame, preferably on fixed axles projecting from bow members of the frame that embrace the battery-holding casings, and which are normally spaced from the supporting surface so as to engage the latter only to prevent toppling of the vehicle, as when making a sharp turn.

3,684,047
WHEEL SLIP LIMITING APPARATUS WITH MECHANICAL CONTROL
Harry C. Zeisloft, and David L. Van Ostrom, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 23, 1970, Ser. No. 100,859
Int. Cl. B60k *31/00*
U.S. Cl. 180—77 R **5 Claims**



The maximum traction of a vehicle during acceleration is assured by a wheel slip sensitive variable duty cycle centrifugal switch for periodically interrupting engine ignition by an amount proportional to wheel speed difference so that if excessive slipping of the driven wheels occurs, the engine torque output is reduced to limit the wheel slip. A mechanical differential has inputs driven according to non-driven and driven wheel speeds and a carrier with a rotational speed proportional to the difference in wheel speeds. The centrifugal switch is operated in response to the carrier speed.

3,684,048
CAMPER
Charles Prater, Route 2, Box 888, Morehead, Ky.
Continuation-in-part of Ser. No. 739,779, June 25, 1965, abandoned. This application Aug. 24, 1970, Ser. No. 66,316
Int. Cl. B62d *21/14*
U.S. Cl. 180—89 **8 Claims**

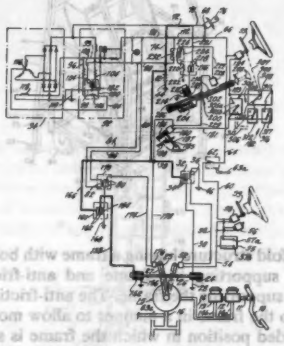


A load carrying vehicle such as a camper adapted to be detachably connected to a tractor vehicle of the pick-up truck body type, preferably of the four wheel drive type having a cargo compartment body box positioned behind the passenger compartment, and a draw-bar or rear plate carried by the chassis of the truck at the rear of and beneath the body box or cargo compartment. The camper or other load carrying vehicle has a centrally disposed bottom section adapted to be positioned within the body box or cargo compartment of the pick-up truck vehicle, and to be secured to the draw-bar or rear plate positioned at the rear of the truck. The camper has aligned laterally enlarged or wider sections, (1) to overlie the sidewalls of the members defining the bed or cargo compartments of the pick-up truck, and (2) to overlie the passenger compartment of the tractor vehicle, and (3) positioned at the rear of or behind the tractor vehicle. The camper or load carrying vehicle has a pair of independent wheels beneath the wider section positioned at the rear of or behind the tractor vehicle to support a portion of its load of the camper. These independent wheels are preferably at a wider tread width than the wheels of the tractor vehicle to stabilize the camper vehicle and to prevent excessive roll of the assembly consisting of the tractor vehicle and the camper as it rounds curves or transverses rough terrain.

3,684,049
VEHICLE FOOT BRAKE LOCKING MECHANISM; FOOT BRAKE LOCKING MECHANISM RELEASE MEANS; AND PARKING BRAKE LOCKING MECHANISM RELEASE MEANS
Seiji Kimura, 508 Seijo-Machi, Setagaya-ku, Tokyo 157, Japan
Filed Feb. 9, 1970, Ser. No. 9,524
Claims priority, application Japan, Feb. 19, 1969, 44/011821; May 12, 1969, 44/035715
Int. Cl. B60t *7/12*
U.S. Cl. 180—103 **30 Claims**

An electrical mechanism for locking the foot brake of a motor vehicle, including a solenoid which causes the foot brake to be locked in position and an electrical relay system comprises of a circuit which, when completed, actuates the solenoid; the relay system circuit includes the vehicle ignition switch, a stop light switch which is closed when the foot brake is operated and the vehicle rear stop lights are lit; a first switch which is closed when the automatic locking mechanism has not been activated; three second switches in electric parallel, a first one that is associated with the gear shift lever and is

closed when the gear shift lever is in Neutral gear, a second one that may be closed by the vehicle operator if he desires the foot brake to automatically lock, and a third inertia controlled safety switch that is closed only after the vehicle has come to a full stop when there has been a rapid deceleration of the vehicle. The foot brake locking mechanism release means comprises a solenoid, which, when activated, causes release of the foot brake locking mechanism and a second relay system circuit associated with this solenoid, which second circuit must be completed to activate the solenoid; the second circuit includes the vehicle ignition switch, a second switch which is closed only when the gear shift lever is in one of the driving gears, a third switch which is closed when the motor is operating, a fourth switch which is closed only when the foot brake is



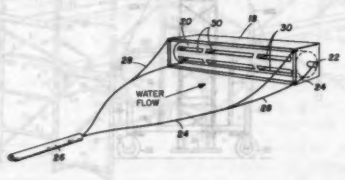
locked, a fifth switch which is closed just as the vehicle operator initiates movement of the vehicle, and in parallel with each other there are a vacuum switch connected with the vehicle motor induction manifold to be closed upon pressure reduction in this manifold and a gravity controlled switch means which is closed when the vehicle is on a level surface and is open when the vehicle is facing uphill or downhill. The parking brake locking mechanism release means also comprises a solenoid which, when actuated, releases the parking brake and a third relay system circuit, which must be completed to activate the solenoid. The third circuit includes switches functionally identical to the switches for the foot brake locking mechanism release means, but in place of the switch that senses that the foot brake is locked, there is a switch that senses that the parking brake is on.

3,684,050

METHOD AND APPARATUS FOR ACOUSTIC ENERGY GENERATION IN MARINE EXPLORATION

Roy C. Johnston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 35
Int. Cl. G01v *1/38*
U.S. Cl. 181—.5 H **16 Claims**



The invention is directed to structural bodies adapted to be towed through water by a seismic exploration vessel. Physical characteristics of the body are varied between a first mode wherein a relatively sharp discontinuity occurs in the velocity of water passing over the structural body and a second mode wherein the relatively sharp discontinuity is reduced. Various embodiments include varying the physical orientation of the body with respect to the direction of towing, varying the degree of resiliency of the towed body, varying the speed of towing of the body through the water, and varying the dimensional size of the body during towing.

3,684,051

ACOUSTIC DUCT SPEAKER SYSTEM

Herbert J. Hopkins, 24 Portland St., Old Orchard Beach, Maine

Filed Oct. 8, 1970, Ser. No. 79,143
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **14 Claims**

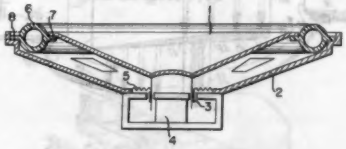
A bass reflex cabinet speaker assembly, e.g. as for use with stereo and high-fidelity speaker systems, having a port coupling the cabinet to the air, and having mounted within said port an acoustic duct formed of a large number of contiguous conduits each of a different length, differing progressively from the center to the periphery of the duct and preferably so formed that the end of the duct is in a concave or convex parabolic shape. In the most advantageous forms of the invention, a flexible corrugated paperboard sheet—or other sheet having a series of conduits therein—may be cut generally obliquely either rectilinearly or curvilinearly and rolled up to form the acoustical duct.

3,684,052

SUSPENSION FOR LOUDSPEAKER

Hiromi Sotome, 7-5, Nakazawa-cho, Hamamatsu-shi, Shizuoka, Japan

Filed Feb. 8, 1971, Ser. No. 113,335
Claims priority, application Japan, Feb. 13, 1970, 45/11985; Feb. 13, 1970, 45/11986
Int. Cl. G10k *13/00*; H04r *7/00*
U.S. Cl. 181—32 R **3 Claims**



A loudspeaker in which a diaphragm is supported at its marginal edge on a frame by means of a suspension which consists of an annular, hollow member of rubber-like elastic material having a substantially circular shape in cross section, which is connected at its inside periphery to said marginal edge of the diaphragm and at its outside periphery to said frame. A method for making the annular suspension member of rubber-like elastic material which comprises continuously extruding a hollow tube having a substantially circular cross section of the rubber-like elastic material in a helical form having a

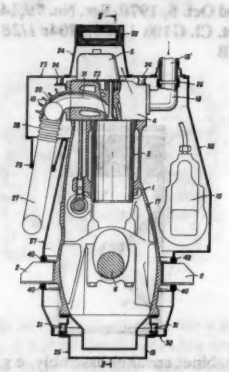
predetermined diameter, and then cutting the helically extruded hollow tube to form annular suspension members successively.

3,684,053

INTERNAL COMBUSTION ENGINE WITH SOUND-ABSORBING CASING

Heinz Fachbach, and Gerhard Thien, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 2, 1970, Ser. No. 68,974
Int. Cl. F02b 77/00
U.S. Cl. 181—33 K 6 Claims



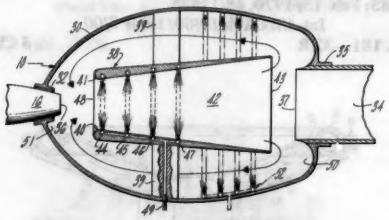
A sound absorbing casing for internal combustion engines in which a first group of casing members are arranged in spaced relation to the engine and directly attached thereto to produce a sound-attenuating effect and a second group of casing members arranged in spaced relation to the engine and removably attached to the casing members of the first group.

3,684,054

JET ENGINE EXHAUST AUGMENTATION UNIT

Richard D. Lemmerman, P. O. Box 192, W. Hartford, Conn.

Filed Feb. 25, 1971, Ser. No. 118,905
Int. Cl. F01n 33/04; B64d 33/06
U.S. Cl. 181—33 HC 16 Claims



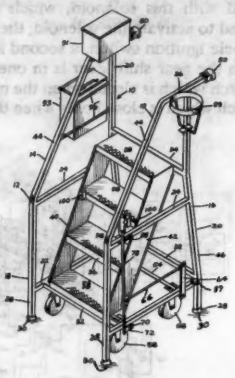
A turbojet engine exhaust augmentation unit comprising an elongated nozzle for receiving the turbojet engine exhaust, a water injection system for injecting water into the engine exhaust for cooling the exhaust, an enlarged rear discharge conduit for discharging the cooled engine exhaust from the augmentation unit and an elongated shroud having a forward collar for close coupling the augmentation unit to the turbojet engine tail pipe and operable for returning a portion of the nozzle exhaust from the nozzle outlet to the nozzle inlet for augmentation of the jet exhaust.

3,684,055

SCAFFOLD STRUCTURE

Robert C. Rice, 1405 Pemberton Drive, Ft. Wayne, Ind.

Filed Aug. 27, 1970, Ser. No. 67,359
Int. Cl. E06c 1/397, 5/00
U.S. Cl. 182—17 6 Claims



A scaffold structure having a frame with both means for stationarily supporting the frame and anti-friction means for movably supporting the frame. The anti-friction means is connected to the frame in a manner to allow movement between an extended position in which the frame is supported on the anti-friction means and a retracted position in which the frame is supported by the stationarily supporting means. Means is provided for moving the anti-friction means between its extended and retracted position and for locking the anti-friction means in its extended position. In a specific embodiment, the frame has a ladder secured to the frame and a second ladder removably connected to the frame, the removable ladder forming an extension of the secured ladder.

3,684,056

AUTOMATIC SCAFFOLDING ERECTING AND DISMANTLING MACHINE

George N. Penso, 6637 Gatto Ave., El Cerrito, Calif.

Division of Ser. No. 872,503, Oct. 30, 1969, Pat. No. 3,614,993. This application Sept. 4, 1970, Ser. No. 69,855
Int. Cl. B65g 57/00; E04g 1/14
U.S. Cl. 182—19 5 Claims

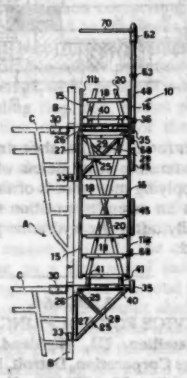
A machine for erecting and dismantling stacks of commercial scaffolding or shoring units includes an adjustable open-sided U-frame supported on four dirigible wheels which are

vertically adjustable so the frame can automatically level itself and a semi-automatic elevator system with mechanically interlocked lifting hooks which will automatically raise or lower a stack of scaffolding units by an interval of one scaffolding unit whereby a scaffolding unit may be added or subtracted from the bottom of the stack. Stabilizing winches allow the stacks to be erected during windy conditions and to greater heights.

3,684,057
PORTABLE STAIRWAY

Horace Eppinette, 5533 Palmdale Way, Sacramento, Calif.

Filed June 4, 1971, Ser. No. 149,928
Int. Cl. E06c 9/08
U.S. Cl. 182—93 9 Claims

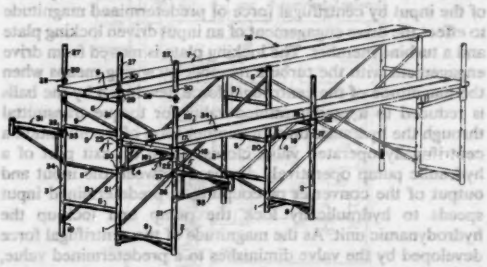


A portable stairway comprised of sections is releasably lockably mounted onto an outrigger support in turn releasably lockably secured to scaffolding structure or the like. A safety side guard rail is hingedly attached to supporting posts which in turn are pivotally mounted to the stairway side frame. A support locking post hingedly attached to the upper end of the safety side guard rail is slidably received within a support tube carried by the outrigger to releasably lockably secure each stairway section to the outrigger support. An inverted U-shaped collar secured to the top of the support-locking post couples the safety side guard rails of adjacent stairway sections into a continuously extending rail. An end safety guard rail extends between the side rail and the scaffolding structure.

3,684,058
SCAFFOLD

William M. Brown, Milwaukee, Wis., assignor to Ultra Products, Inc., Milwaukee, Wis.

Filed May 13, 1971, Ser. No. 142,932
Int. Cl. E04g 1/20
U.S. Cl. 182—132 6 Claims

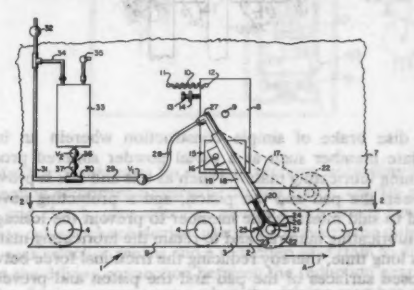


This invention is directed to a scaffold which may be readily assembled and adjusted for use by a workman or workmen having to work at different heights. The scaffold has a scaffold frame of three legs at each end comprising a center leg, an outer leg and an inner leg. Readily removable diagonal braces extend between the outer end legs and the respective center end legs and horizontal structural members are welded at different heights to each outer leg and the adjacent center leg to provide a rigid structure and also a ladder for use by the workman in climbing onto the scaffold. The horizontal structural members support planking or the like for holding work material at different height levels. The inner end legs are secured to the center legs at the bottom portions thereof by a reinforcing member. In addition, telescoping frames are provided of somewhat V-shape consisting of a pair of braces welded to a tube at one end which telescopes over the inner legs and U-shaped brackets at the other end of the braces which embrace the respective center legs. The frames are secured to the inner legs and center leg at different heights and support planking to provide a walking platform to support a workman.

3,684,059
CHAIN LUBRICATING APPARATUS

Jack L. Stoner, 115 N. Court St., Standish, Mich.

Filed April 20, 1970, Ser. No. 30,025
Int. Cl. F16n 7/22
U.S. Cl. 184—15 B 5 Claims

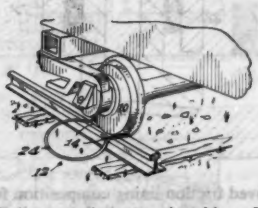


Apparatus for lubricating a chain composed of a plurality of links pivoted to one another, alternate ones of the links having openings therein, the apparatus comprising a carrier pivoted adjacent the chain and having nozzles movable into and out of the chain openings and through which a limited quantity of lubricant may be discharged in opposite directions so as to lubricate the pivot pins at opposite ends of each link.

3,684,060
WHEEL CHOCK

James B. Waddle, Decatur, Ga., assignor to Power Parts Company

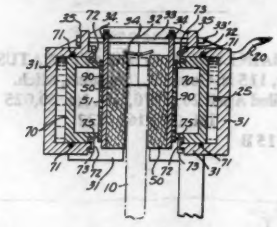
Filed Oct. 12, 1970, Ser. No. 80,010
Int. Cl. B61h 7/02
U.S. Cl. 188—36 3 Claims



A wheel chock for engaging opposite sides of a wheel to prevent rolling in either direction is provided by a pair of spaced wedge-like blocks that are secured together in pre-spaced relation by a hoop-like bar of resilient steel that operates to maintain the blocks in position while permitting

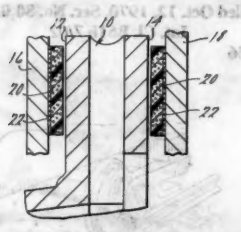
flexing of the hoop to effect removal of the blocks from opposite sides of a wheel.

3,684,061
DISC BRAKE
Tokuo Ogawa, Tsushima; Tatsumi Sakano, Nagoya, and Shigeyoshi Okamura, Aichi-ken, all of Japan, assignors to Toyota Jidosha Hanbai Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan
Filed May 1, 1970, Ser. No. 33,707
Claims priority, application Japan, May 8, 1969, 44/35856; June 3, 1969, 44/46294; June 12, 1969, 44/43859
Int. Cl. F16d 65/02
U.S. Cl. 188—73.5 13 Claims



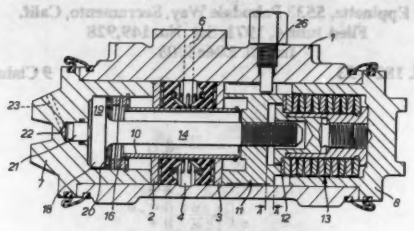
A disc brake of simple construction wherein an intermediate member such as a metal powder sintered product retaining lubricating material such as oils and fats is provided between the pad and the piston, and a protecting cover is fitted to said intermediate member to prevent the leakage of said lubricating material and to retain the lubricating material for a long time, thereby reducing the frictional force between opposed surfaces of the pad and the piston and preventing brake squeal for a long time.

3,684,062
FRICTION LINING COMPOSITION
Howard R. Johnson, Ann Arbor, Mich., assignor to Kelsey-Hayes Company
Continuation of Ser. No. 799,216, Feb. 14, 1969, abandoned.
This application Jan. 29, 1971, Ser. No. 111,155
Int. Cl. F16d 69/02
U.S. Cl. 188—251 R 11 Claims



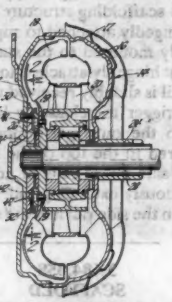
An improved friction lining composition for vehicle brakes and the like possessing controlled dynamic friction properties and comprising a reinforcing material, conventional fillers and/or friction-modifying additives, a bonding agent and a controlled amount of a particulated fluorocarbon plastic dispersed throughout the lining.

3,684,063
VEHICLE BRAKE ACTUATOR AND LOCK ASSEMBLY
Norman Crabtree, Kings Road Tyseley, Birmingham 11, England
Filed March 31, 1970, Ser. No. 24,105
Claims priority, application Great Britain, April 3, 1969, 17,692/69; June 13, 1969, 30,190/69; July 3, 1969, 33,624/69 33,629/69
Int. Cl. F16d 63/00
U.S. Cl. 188—265 8 Claims



A slave cylinder for an internal shoe drum brake is provided internally with extensible strut means which normally follow up brake shoe applying movements of the cylinder and which can be locked in an extended position to hold the shoes applied mechanically, after the hydraulic (foot pedal) pressure has been released.

3,684,064
LOCK-UP DEVICE FOR COUPLING OR CONVERTER
Stoddard C. Hamilton, III, Highland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 23, 1970, Ser. No. 83,361
Int. Cl. F16h 41/18
U.S. Cl. 192—3.31 4 Claims

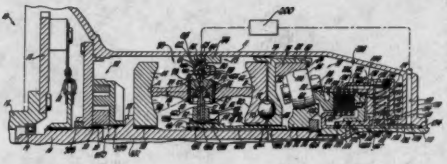


Hydrodynamic unit having a lock-up device to prevent slip of the rotors subsequent to the attainment of a predetermined input speed. In one form of the invention camming balls are moved outwardly on special ramps in response to rotary drive of the input by centrifugal force of predetermined magnitude to effect the drive engagement of an input driven locking plate and a turbine member. The locking plate is moved from drive engagement with the turbine member by spring means when the magnitude of the centrifugal force developed by the balls is reduced to a predetermined value for torque transmittal through the hydraulic unit. In another form of the invention a centrifugally operated valve closes off an oil exit port of a hydraulic pump operatively disposed between the input and output of the converter or coupling at predetermined input speeds to hydraulically lock the pump and lock-up the hydrodynamic unit. As the magnitude of the centrifugal force developed by the valve diminishes to a predetermined value, spring means moves the valve to open the discharge port so that the pump pumps fluid therethrough allowing the hydraulic operation of the hydrodynamic unit.

3,684,065
TRANSMISSION AND CLUTCH CONTROL

Milton H. Scheiter, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,891
Int. Cl. B60k 21/00
U.S. Cl. 192—3.52 20 Claims

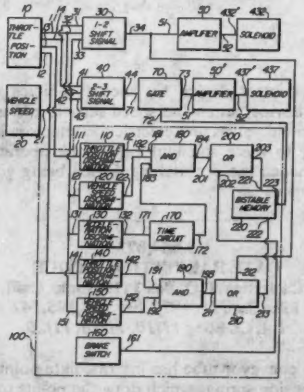


A traction drive transmission comprising input and output shafts; an input race secured to the input shaft for rotation therewith; an output race rotatably mounted on the input shaft; a plurality of tiltable rollers mounted in frictional contact at the edges thereof with the input and output races; a planetary unit including ring, sun, planet pinion and carrier members, the direction of rotation of the carrier member being determined by roller tilt position and relative sun and ring member speeds; clutch means for at times operatively connecting the carrier member to the output shaft; and hydraulic control means for tilting the rollers in response to signals indicative of predetermined engine parameters and for engaging the clutch means to rotate the output shaft in one direction in response to a first signal indicative of a first predetermined tilt angle portion of the total tilt angle range of the rollers and for rotating the output shaft in the opposite direction in response to a second signal indicative of a second predetermined tilt angle portion of the total tilt angle range of the rollers, and for disengaging the clutch means in response to a third signal indicative of the remaining portion of the total tilt angle range of the rollers, there being a predetermined, infinite torque, tilt angle position in the latter tilt angle portion at which the speeds of the ring and sun are substantially equal and the planet pinions are stationary.

3,684,066
AUTOMATIC SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Seitoku Kubo; Takakazu Mori, both of Toyota; Hisato Wakamatsu, Kariya, and Hisasi Kawai, Toyohashi, all of Japan, assignors to Toyota Jidasha Kogyo Kabushiki Kaisha, Toyotacho, Toyota-shi and Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Sept. 28, 1970, Ser. No. 75,837
Claims priority, application Japan, Oct. 8, 1969, 44/80640
Int. Cl. B60k 21/02, 29/00
U.S. Cl. 192—4 A 3 Claims

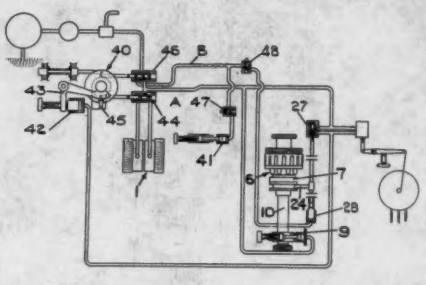


An automatic shift control system for an automatic transmission comprising a mountainous area circuit having an activity detecting means, a brake fluid pressure detecting means and a computing means so that the shift pattern can be automatically changed depending on the variation in the driving conditions and the vehicle can run in a mountainous area while preventing the gear from frequently shifting to high gear and maintaining same in low gear.

3,684,067
HAULAGE MECHANISM FOR MINING MACHINES

Forrest Symington Anderson, Carluke, Scotland, assignor to Anderson Manor Limited, Motherwell, Lanarkshire, Scotland

Filed Jan. 8, 1971, Ser. No. 105,024
Claims priority, application Great Britain, Jan. 15, 1970, 2,058/70
Int. Cl. F16d 67/00
U.S. Cl. 192—4 R 5 Claims

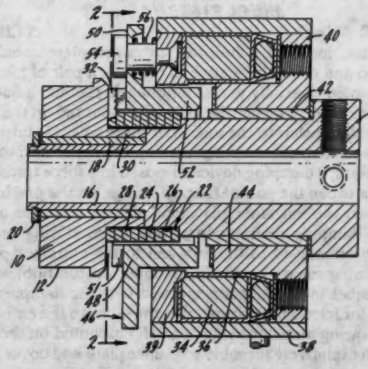


Haulage mechanism for mining machines according to the invention comprises a hydraulic driving clutch, control means for said clutch, gear selection means, hydraulically operated safety cut-out clutch device interposed between the output of the gear selection means and a reduction gear train to disconnect the driving connection between the reduction gear train and a driving power source when the driving member of the safety clutch device rotates relative to the driven member and at the same time apply brake means to the reduction gear train.

3,684,068
ELECTROMECHANICAL CLUTCH

Frederick M. Ford, Carpentersville, Ill., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.

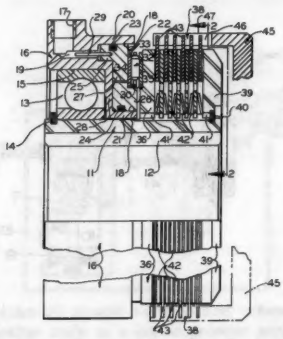
Filed March 30, 1971, Ser. No. 129,403
Int. Cl. F16d 13/08, 41/20
U.S. Cl. 192—84 T 13 Claims



An electromagnetic clutch for coupling a normally continuously running input shaft to a normally stationary output shaft.

A coil spring is wound about portions of the input and output shafts and forms the driving connection therebetween. An electromagnet is concentric with the input and output shafts and has a movable armature normally engaging the spring and preventing its rotation. The spring only forms a driving connection between the input and output shafts at such time as it is released by the armature.

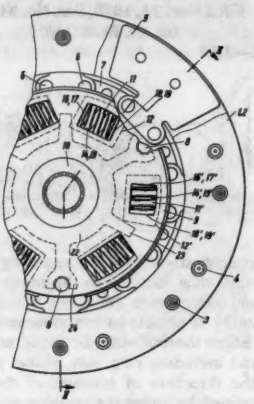
3,684,069
HYDRAULIC DISC CLUTCH
Lawrence H. Pray, 35296 Malibu, Sterling Heights, Mich.
Filed Oct. 22, 1970, Ser. No. 82,944
Int. Cl. F16d *25/08*
U.S. Cl. 192—85 CA **3 Claims**



A fixed annular hydraulic cylinder slidably receives an annular piston of a special, generally Z-shaped cross-section, which pilots at one of its parallel legs on a horizontal shoulder portion of the cylinder. The other piston leg serves as a positioning pilot surface for an annular needle bearing transmitting axial thrust to a pressure plate of a disc clutch stack. A large projected annular are of the piston is engaged by the needle bearing for high torque capacity, and a large diameter radial and axial thrust-sustaining ball bearing journals a driver hub of the clutch within the latter's cylinder portion, at the axial side of the piston opposite the needle bearing.

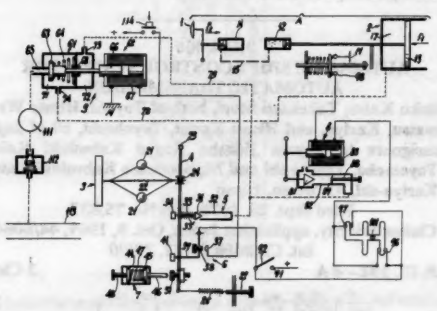
3,684,070
CLUTCH DISC
Paul Maucher, Im Finkengarten, 7571 Neuweler, Germany
Filed April 21, 1970, Ser. No. 30,483
Int. Cl. F16d *3/14*
U.S. Cl. 192—106.2 **5 Claims**

Clutch disc includes a hub, an entrainer plate coaxially mounted on and turnable relative to the hub, a pair of friction linings mounted coaxially to one another on the hub adjacent the entrainer plate, a cover disc coaxially mounted on the hub in spaced relationship to the entrainer plate which is turnable relative thereto, rivet means connecting the cover disc to the entrainer plate, a damping device disposed in a force transmission path between the pair of friction linings, on the one hand, and between the entrainer plate and the hub, on the other hand, the damping device comprising force storing means operatively connected to the hub and to the entrainer plate, damping lining means coaxially mounted on the hub, and a spring member in stressing engagement with the damping lining means for frictionally connecting the latter to the entrainer plate, the spring member being coaxially mounted on the hub between the relatively turnable entrainer plate and cover disc, the spring member having an annular surface engaging the damping lining means and having means engageable with a peripheral contour of the rivet means interconnecting the entrainer disc and the cover disc for securing the spring member,



at a location radially beyond the damping lining means, against turning.

3,684,071
CLUTCH CONTROLLED BY ENGINE SPEED AND TRANSMISSION SELECTOR
Charles Terres Wheymann, 13 rue Galvani, 75 Paris 17 eme, France
Filed Jan. 29, 1970, Ser. No. 6,704
Claims priority, application France, Feb. 3, 1969, 6902249
Int. Cl. B60k *21/00*
U.S. Cl. 192—3.58 **13 Claims**

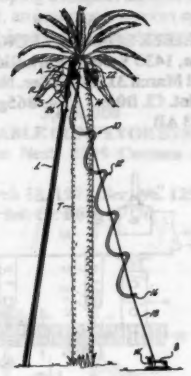


A clutch control device for motor vehicles includes a declutching device, an engine speed sensor, and an arrangement of solenoid valves and electrical contactors in the electrical supply to these solenoid valves, the operation of the valves and hence the declutching device being governed by the speed sensor.

3,684,072
DATE HARVESTING DEVICE
Salvador C. Castrellon, P.O. Box 1119, Indio, Calif.
Filed Jan. 11, 1971, Ser. No. 105,542
Int. Cl. B65g *11/10, 11/18, 11/20*
U.S. Cl. 193—7 **4 Claims**

A flexible conveyor tube has intermediate points interconnected by tension springs which draw the points together and configure the tube into a plurality of consecutive loops. One

end of the tube has a gathering funnel and the other end is provided with a closure and a pull line. The springs vary in strength from strongest at the closure to least strong at the funnel. The funnel is adapted to be connected to a date tree disposed about a bunch of dates, with the looped tube suspended in depending relation. Dates gravitate into and are held in the uppermost loop. A pull on the line elongates the uppermost spring and varies the configuration of the upper-



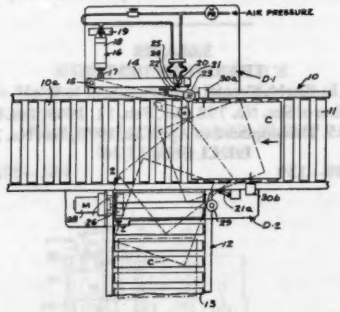
most loop so that the dates gravitate therefrom into the next loop. Additional pull varies the configuration of the consecutive loops sequentially and controls the speed of gravitational movement of the dates. After the dates are in the lowermost loop, the closure is opened to discharge the dates into a container. A plurality of gathering funnels can be connected to the upper end of the tube for harvesting the pickings of several pickers.

3,684,073

CONVEYOR SYSTEM

James Giles, Franklin Park, Ill., assignor to American Chain & Cable Company, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,418
Int. Cl. B65g *13/00*
U.S. Cl. 193—36 **18 Claims**



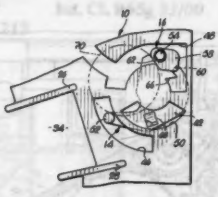
A conveyor system including a first conveyor along which articles are moved in a predetermined path and a second conveyor to which the articles are transferred from the first conveyor. A pusher bar is mounted for movement upon signal to engage an article and deflect a front corner of the article onto high speed rollers. The high speed rollers assume control of the article and direct the article around a roller stop onto the second conveyor and force it onto the second conveyor. The pusher bar is operated at a first speed and force until it engages the article and thereafter is operated at an increased speed and force until it deflects the article onto the high speed diverting rollers the required distance. The pusher bar returns to rest and the article is transferred to the second conveyor.

3,684,074

CRADLE LOCK MECHANISM FOR COIN TESTING DEVICES

Oreste Soraci, Independence, and John A. Hennessy, Raytown, both of Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Aug. 18, 1970, Ser. No. 64,700
Int. Cl. G07f *3/02*
U.S. Cl. 194—102 **9 Claims**



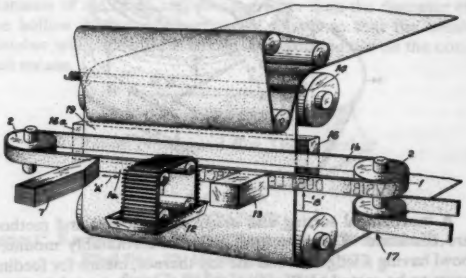
An improved, coin gauging, cradle lock mechanism for coin testing devices of the kind employing at least one two-legged testing and transfer cradle is provided by replacing one of the two ordinarily fixed legs of the cradle with a dual-purpose leg pivotally mounted on the cradle base and having both a coin-gauging surface juxtaposed with the other leg and a latching element releasably interlocked with a cooperating part on the frame structure of a device. A genuine coin of proper weight and diameter oppositely engages the fixed leg and the gauging surface portion of the pivoted second leg to swing the latter sufficiently to release the cradle latching element from the frame structure, so that the cradle may turn to deliver the coin to a generally laterally extending path for further testing or acceptance.

3,684,075

BELT PRINTER WITH CONDUCTIVE ELEMENTS ON NON-CONDUCTIVE BELT

Karel Jan Staller, Rutherford, N.J., and Hertwig Lange, Riverside, Conn., assignors to International Telephone Telegraph Corporation, Nutley, N.J.

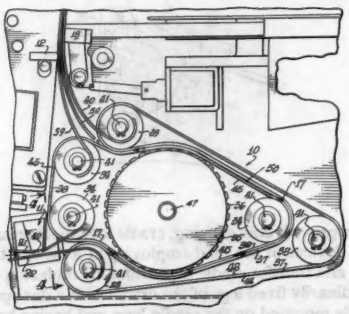
Filed Nov. 7, 1969, Ser. No. 874,744
Int. Cl. B41j *3/18*
U.S. Cl. 197—1 R **9 Claims**



An arrangement for printing from a resilient continuous belt carrying miniature chargeable elements capable of being selectively loaded by a recording head in accordance with received information signals. The selective loading of the

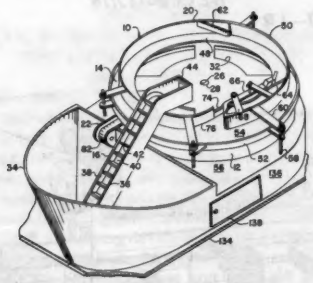
chargeable elements creates on the belt invisible charge patterns which attract powder applied thereto, resulting in the formation of visible images to be subsequently transferred to a permanent recording medium a line at a time.

3,684,076
ENDLESS BELT PAPER TRANSPORTING AND PROCESSING APPARATUS
N. Robert Crain, Huntington Beach; William W. Crain, Santa Ana; Gary L. Pollitt, Fountain Valley, and Donald E. Rea, Santa Ana, all of Calif., assignors to Documentor Sciences Corporation, Santa Ana, Calif.
Filed Feb. 2, 1970, Ser. No. 7,840
Int. Cl. B41j *13/00*
U.S. Cl. 197—127 R **5 Claims**



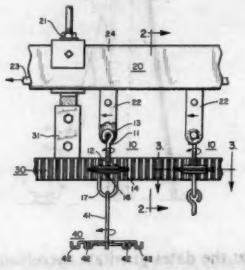
A processing input and output apparatus wherein a paper member bearing input data is transported along a path from the input of the apparatus to the output thereof by cooperating endless belts supported on crowned rollers and driven frictionally by a drive wheel in a sprocketless assembly. During the movement through the apparatus, the paper is sensed, read and printed upon.

3,684,077
STRUCTURE FOR AND METHOD OF SORTING AND ORIENTING
Archibald A. MacIntyre, 18221 Laurel, Livonia, Mich.
Filed May 11, 1970, Ser. No. 36,304
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **8 Claims**



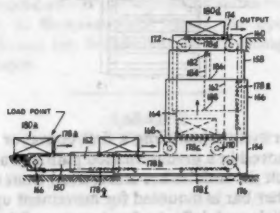
A mechanical sorting and orienting structure and method are disclosed. The structure includes a rotatably mounted bowl having a ledge around the top thereof, means for feeding parts to be sorted and/or oriented onto the ledge of the bowl as it is rotated, structure for causing parts to be sorted having one characteristic or those having an undesired orientation to fall from the ledge into the bowl and for feeding parts having another characteristic and/or correctly oriented parts from the ledge away from the bowl, means for returning parts from within the bowl back to the means for feeding the parts onto the ledge of the bowl again and drive means for the bowl and the feeding and returning means. The method includes the feeding of the parts onto the ledge of the rotating bowl, moving parts having one characteristic into the bowl and subsequently back to the feeding means and onto the ledge of the bowl again and feeding the parts on the ledge having another characteristic from the ledge of the bowl away from the bowl.

3,684,078
ROTATABLE LOAD-BEARING PENDANTS
Frank H. Nielsen, 1433 Vernon, Park Ridge Manor, Ill.
Filed March 31, 1971, Ser. No. 126,110
Int. Cl. B05c *11/14*; B65g *17/20*
U.S. Cl. 198—33 AB **2 Claims**



A rotatable load-bearing pendant of the type commonly used in conjunction with an overhead conveyor system is provided comprising a cylindrical shaft having one end threaded and the other curved to provide a fastening means in the form of a hook. A disc having a hole therein constituting a shaftway is adapted to rotatably receive the shaft such that the threaded portion of the shaft and the shaftway provide a lateral bearing. A locknut is employed to captivate the disc on the shaft such that the bottom side of the disc and the top side of the locknut form a vertical bearing. Additional holes are provided in the disc such that they partially overlap the shaftway to thereby form small vertical slots in the side of the shaftway which cooperate with the threaded portion of the shaft to provide a self-cleaning action as the disc is rotated relative to the shaft. A U-shaped hook is symmetrically connected to the underside of the disc in order to provide means for attaching a load to the disc.

3,684,079
TRANSPORT DEVICE
Guenther L. Kuehl, Croton Ave., Peekskill, N.Y.
Division of Ser. No. 798,366, Feb. 11, 1969, Pat. No. 3,578,145. This application April 22, 1970, Ser. No. 38,640
Int. Cl. B65g *15/26*
U.S. Cl. 198—139 **4 Claims**



In the several embodiments of the invention described herein, an adjustable transport device is provided which includes a multiple chain drive system for transporting unit

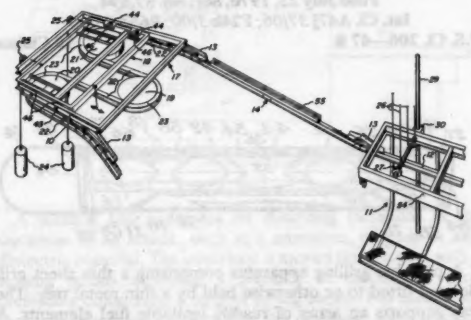
loads of material between a number of vertically and laterally displaced locations. In one embodiment, the device is provided as a truck attachment, and in a second embodiment, the vertical lift is permanently installed in a truck dock. In the third embodiment, a transport device for aircraft and the like carriers is provided with self-adjusting features and a unique platform construction. In a fourth embodiment, a transport device provides perpetual motion bridging for transporting people or material across obstacles and in the fifth and sixth embodiments, telescoping transport devices are provided. In a seventh embodiment, an inverted transport system is provided for transporting unit loads of material between at least three locations.

3,684,080

ADJUSTABLE CONVEYOR SYSTEM

William Bradley Van Nest, 3295 Carman Road, Excelsior, Minn.

Filed March 18, 1971, Ser. No. 125,521
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **12 Claims**



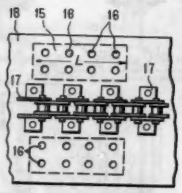
A trolley conveyor system is provided wherein an intermediate section of the conveyor can be vertically displaced, while in operation, relative to the portions of conveyor on either side of the section. Slip rail members are provided to lengthen and shorten the arms connecting the displaceable portion to the fixed rails on each side thereof. A take-up mechanism to compensate for length changes in the system resulting from the raising and lowering of the vertically displaceable portion is also provided.

3,684,081

SHEET TRANSFER DEVICE

Masaharu Matsuo, 17-3,3-chome, Higashikomagata, Sumida-ku, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,862
Int. Cl. B65g *15/00*
U.S. Cl. 198—184 **7 Claims**



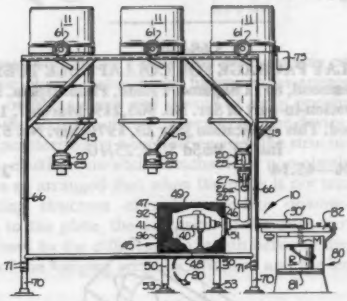
A sheet transfer device for use between the units of a continuous, automatic processing line for making cardboard containers has a continuous apertured conveyor belt moved in a loop by means of an attached chain which engages a driven sprocket. A vacuum chamber having a foraminous top is arranged under a horizontal run of the belt to secure sheets to the belt when the sheets overlie the apertures in the belt while the belt travels over the vacuum chamber. The entire device with its accessories is mounted on a common frame for convenient removal when the processing units require servicing.

3,684,082

APPARATUS FOR UNIFORMLY FEEDING NON-LIQUID MATERIAL

Winnifred A. Wardell, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Stanley, N.C.

Continuation-in-part of Ser. No. 815,868, April 14, 1969, Pat. No. 3,598,286. This application Feb. 19, 1971, Ser. No. 116,882
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**



Apparatus for uniformly feeding powder, crystalline, paste, pellet and the like non-liquid material including hopper means for dispensing the material, valve means attached to the bottom of the hopper means, enclosed, generally horizontally-extending conduit means for receiving and allowing passage therethrough of the material received therefrom and including an opening for the dispensing of the material from the apparatus, and rotary driven spiral conveying means disposed within the conduit for uniformly feeding the material therethrough. The spiral conveying means comprises a driven, cylindrical shaft, and a spiraled, generally cylindrical, flexible, resilient brush member having an initial predetermined inside diameter less than the diameter of the shaft so that the brush member may be force-fitted on the shaft to prevent relative displacement during use but allowing disengagement of the brush member for cleaning and replacement. The outside diameter of the brush member is greater than the diameter of the hollow interior of the conduit means so that the brush member will perform a cleaning action during use on the conduit means.

3,684,083

Patent Not Issued For This Number

3,684,084

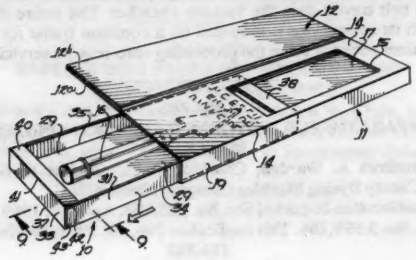
CONTAINER

James C. Kanzelberger, 3040 S. Harlem Ave., Riverside, Ill.

Filed Dec. 22, 1970, Ser. No. 100,572
Int. Cl. B65d *25/00, 25/54*
U.S. Cl. 206—45.31 **8 Claims**

A container for containing a gift article or articles, the container comprising an outer sleeve and an inner tray slidable therein, the sleeve having a pair of side panels, a rear panel connected to the side panels, a face panel connected to the

side panels and having a cut-out opening therein, and a cover panel hinged to one of the side panels and adapted to selectively lie in face-to-face contact with the face panel to cover the opening therein.



3,684,085

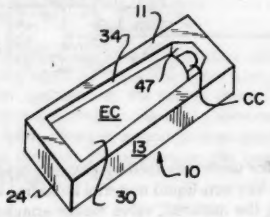
DISPLAY PACKAGE FOR COLLAPSIBLE TUBES

John D. Desmond, 8711 Sagamore Road, Philadelphia, Pa.

Continuation-in-part of Ser. No. 805,219, March 7, 1969, abandoned. This application July 23, 1970, Ser. No. 57,784

Int. Cl. B65d *5/50, 25/10*

U.S. Cl. 206—45.14 **2 Claims**



A display carton for collapsible tubes is formed from a unitary cut and scored blank forming a carton sleeve. The sleeve is formed with a pair of shadow panels flanking the tube being displayed. The closure end of the tube is held in an aperture formed in a retainer tab folded into retaining position at one end of the carton sleeve. The flattened end of the collapsible tube is loaded into the carton sleeve and the opposite end of the sleeve is provided with a retainer tab having a slot therein to receive the flattened ends. The latter retainer tab is formed and folded into position after end loading of the tube to support the latter in said slot. The latter retainer tab is also provided with wing-like elements to assist in the support of the flattened end of the tube.

3,684,086

TISSUE AND WRAPPER FOR DISPENSING TISSUES

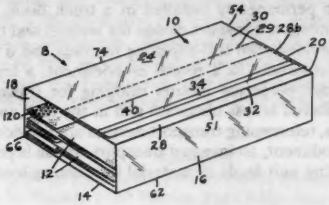
Allen W. Harrison, Toronto, Ontario, Canada, assignor to International Paper Company, New York, N.Y.

Filed July 10, 1970, Ser. No. 53,924

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 R **9 Claims**

A flexible wrapper for dispensing tissues having a protective top through which tissues may be extracted. The protective top is comprised of an under-flap which is adjacent to the tissues over its entire length and width, and a top flap which is contiguous with and overlays the under-flap over a portion of its length. The under flap and the top flap are bonded together along two parallel edges to form a sandwich which is open intermediate the two flaps and the two bonded parallel edges. The tissues have textured gripping ends and are folded lengthwise a plurality of times and then in half widthwise once to achieve a constant height.



3,684,087

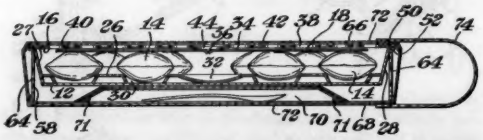
PORTABLE GRILLING APPARATUS

Robert F. Anderson, 3613 13th St., Menominee, Mich.

Filed July 23, 1970, Ser. No. 57,694

Int. Cl. A47j *37/06;* **F24b** *3/00;* **B65d** *85/00*

U.S. Cl. 206—47 R **10 Claims**



A portable grilling apparatus comprising a thin sheet grill element fitted to or otherwise held by a thin metal tray. The tray supports an array of readily ignitable fuel elements. A support member of height greater than the depth of the tray is fitted around the outside of the tray. This grilling apparatus is particularly adapted for a single use.

3,684,088

PROCESS AND MACHINE FOR MANUFACTURING ELECTRIC STORAGE BATTERIES

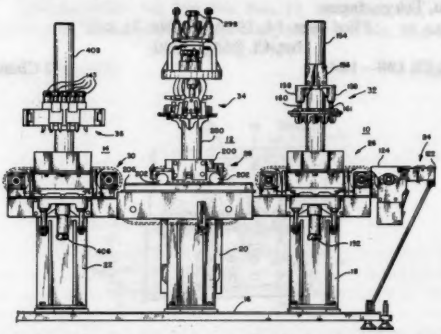
Richard A. Buttke; Anthony Sabatino; Daniel Orlando, all of Milwaukee, and William H. Behrens, Racine, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 268,359, Mar. 27, 1963

Filed Sept. 4, 1970, Ser. No. 69,553

Int. Cl. B07c *5/344*

U.S. Cl. 209—75 **8 Claims**



Apparatus for testing an intercell weld between adjacent battery cell element assemblies includes a plurality of pairs of

test fingers engageable with battery cell element assemblies disposed on opposite sides of battery partition walls. When so engaged, the test fingers are operable to exert a load, both mechanical in tension and electrical, to determine the presence of defective welds. An automatic reject arrangement is associated with the testing mechanism. The reject arrangement is controlled by the testing mechanism and passes acceptably welded batteries while automatically moving those with defective welds to a reject conveyor line.

3,684,089

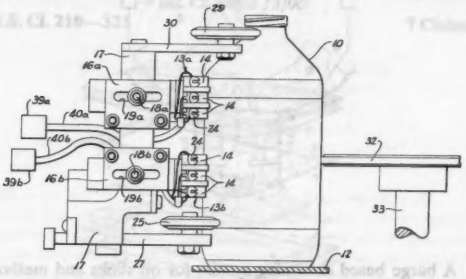
CONTAINER WALL THICKNESS DETECTION

James H. McMeekin, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Filed Sept. 21, 1970, Ser. No. 73,875

Int. Cl. B07c *1/16*

U.S. Cl. 209—82 **13 Claims**



A method and apparatus for detecting variations in the thickness of an article, such as a container, of glass or like dielectric material. The container is moved into contact with a sensing means including a plurality of electrodes, each preferably comprising a strip of spring metal. The electrodes each are in rubbing contact with the container outer surface and flexed slightly to conform to a portion of the container wall surface. The electrodes, container wall and surrounding air comprise a capacitance. As the container is rotated about its axis, variations in the container wall thickness are manifested in changes in the capacitance. A circuit connected to the sensing means produces an electrical indication, in response to a change in the capacitance, which capacitance change can be utilized to activate a reject mechanism.

3,684,090

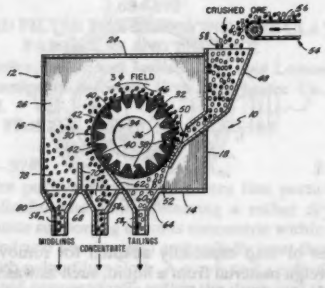
METHOD AND APPARATUS UTILIZING A ROTATING ELECTROMAGNETIC FIELD FOR SEPARATING PARTICULATE MATERIAL HAVING DIFFERENT MAGNETIC SUSCEPTIBILITIES

James R. Kilbride, 705 Grant Ave., Eveleth, Minn.

Filed Dec. 10, 1969, Ser. No. 883,909

Int. Cl. B03c *1/14, 1/24*

U.S. Cl. 209—214 **24 Claims**



Crushed iron ore is introduced into a rotating electromagnetic field. The tailings, which possess little or no magnetic susceptibility, drop downwardly and are gravitationally removed. The concentrate, having a high degree of magnetic susceptibility, is carried by the field for almost a complete revolution. The middlings, on the other hand, have a degree of susceptibility less than the concentrate, and are accelerated with the concentrate only until a sufficient amount of centrifugal force is developed to throw the middlings outwardly to thus separate them from the concentrate.

3,684,091

TENSIONABLE ELASTIC SCREEN BOTTOM

Albert Wehner, Wieladingen, Germany, assignor to Lehmann Hein & Co. AG, Dusseldorf, Germany

Filed Dec. 11, 1969, Ser. No. 884,066

Int. Cl. B07b *1/04*

U.S. Cl. 209—403 **16 Claims**

A screen bottom has a plate with sieve opening consisting of an elastic plastic material and having zones engaged by supporting or fixing strips and devoid of sieve openings. At the ends of the plate are clamping members. The device is particularly characterized by a supporting grid-like structure made of flexible, elastic, somewhat stretchable or non-elastic materials which is so arranged that when the plate is not tensioned the supporting structure extends wave-like downwardly with respect to the plate, the extension of the sieve surface being determined by the difference in length between the wave-like curves of the hanging grid-like structure and the length of the plate.

3,684,092

SLUDGE THICKENER AND METHOD

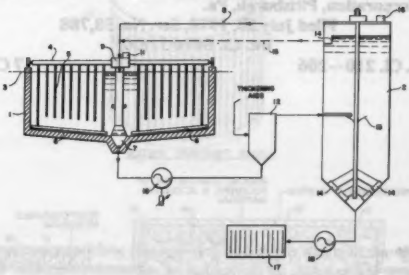
Oswald Busse, and Hugo Klesper, both of Michelbach, Germany, assignors to Passavant-Werke, Michelbacher Hutte, Germany

Filed Feb. 24, 1970, Ser. No. 13,625

Claims priority, application Germany, March 4, 1969, P 19 11 007.7

Int. Cl. B01d *21/00*

U.S. Cl. 210—73 **17 Claims**



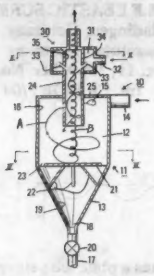
The invention relates to a system for the thickening of sludges, in particular domestic sewage or industrial waste sludges. The system comprises two or more consecutively arranged thickening stages each consisting of one thickening tank or several parallel thickening tanks, and wherein the ratio of the largest inside diameter to the mean sludge level is larger than 1:1 in the first tank and smaller than 1:1 in the second tank relative to the direction of sludge flow.

3,684,093

METHOD AND APPARATUS FOR SEPARATING PARTICLES FROM PARTICLE-LADEN FLUID

Motomi Kono, and Hiroshi Ohtomi, both of Tokyo, Japan, assignors to Ashizawa Iron Works Co., Ltd., Tokyo, Japan

Filed June 23, 1970, Ser. No. 49,039
Claims priority, application Japan, Aug. 13, 1969, 44/63975
Int. Cl. B01d *45/12*
U.S. Cl. 210—84 **3 Claims**



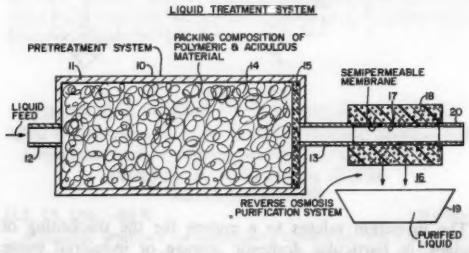
Particles are separated using an apparatus whereby a primary helical flow of the particle-laden fluid is established so as to create radial centrifugal forces whereby particles contained therein are separated and collected. The primary flow is stopped at a point distant from the point of its origin and a secondary helical flow is established in a direction opposite to the primary flow and along the same axis concentric with the primary flow. The secondary flow is isolated from the primary flow at a point distant from its origin and any remaining particles entrapped in the secondary flow are recovered. In a first embodiment, the particles are recovered by injecting a gas into the isolated secondary flow in a tangential, peripheral and counter-axial direction to said secondary flow so as to force the particles back into the stream of the primary flow. In a second embodiment, the particles are removed from the secondary flow by applying of suction to the secondary flow which discharges into the primary flow.

3,684,094

LIQUID TREATMENT SYSTEM FOR HIGH PH WATER

Richard M. Chamberlin, McKeesport, and Regis R. Stana, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1970, Ser. No. 58,788
Int. Cl. B01d *31/00*
U.S. Cl. 210—206 **7 Claims**



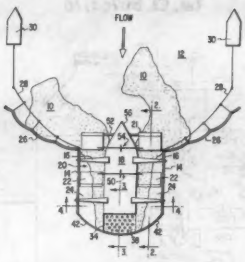
A packing composition effective to reduce the pH of alkaline liquids, used as a pretreatment, in association with a reverse osmosis membrane and support in a liquid treatment system, is made of an encapsulating matrix of polymeric material that is essentially water impermeable at a pH between about 4.5 and 8 and which becomes significantly water permeable at a pH above about 9, and an acidulous material which is encapsulated by the matrix at a pH between about 4.5 and 8, and released progressively from the matrix at a pH above about 9.

3,684,095

BARGE BASED SKIMMING SYSTEM FOR OIL SLICKS

Ray R. Ayers, 12522 Shepherd's Ridge Drive, Houston, Tex.

Filed Sept. 8, 1970, Ser. No. 70,097
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **4 Claims**



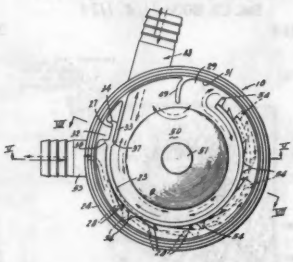
A barge based skimming system for oil slicks and method for use thereof wherein the oil phase is concentrated relative to the water phase prior to its introduction into a final separating compartment wherein the oil is reclaimed in a conventional manner. A barge mounted wave reflector and boom arrangement diverts oil and water into open bottom chutes positioned on either side of a barge. The wave action is damped at the upstream end of the chutes and a skimming operation is performed downstream thereof to divert floating oil upwardly onto a shelf-like structure while allowing the underlying water to continue its passage through the open bottom chute. The shelf structure then directs the oil to a relatively quiescent area defined by a separating container at the rear of the barge where a second separating operation is conducted and the oil reclaimed.

3,684,096

EXPANDABLE SPIRAL FILTER

Gerald L. Kretchman, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 24, 1970, Ser. No. 75,139
Int. Cl. B01d *35/22*
U.S. Cl. 210—356 **13 Claims**



A filter or trap especially adapted for removing lint and other foreign material from a liquid, such as wash water in an automatic domestic washing machine having wash and drain cycles, includes a circular flow path along a housing surface,

and a generally spiral segment flexible filter element cooperates with said surface responsive to the liquid flowing in one direction to close in filtering relation toward the surface and movable into spaced flushing relation to the surface during reverse flow of the liquid. By anchoring the filter element adjacent a port from which filtered liquid passes in operation, the element controls the liquid flow compelling substantially all of the liquid to traverse the filter before reaching the port. Conversely, liquid entering the housing through such port is compelled to sweep the filter element in flushing, cleaning relation.

3,684,097

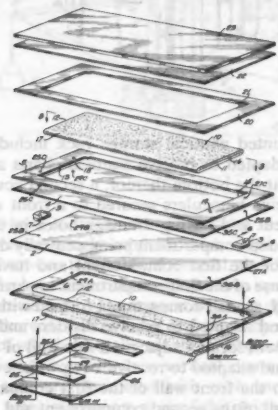
BLOOD COMPONENT EXCHANGE DEVICE

Wilfred F. Mathewson, Jr., Schenectady, and David M. Ryon, Scotia, both of N.Y., assignors to General Electric Company

Filed July 2, 1970, Ser. No. 51,829

Int. Cl. B01d *13/00*

U.S. Cl. 210—321 **7 Claims**



A device for oxygenating or dialyzing blood has elementary units comprising pairs of frames having rectangular openings and a gas permeable membrane on each face. Two confronting membranes define a thin passageway for blood. Remote sides of the membranes confront a porous support structure in a second passageway in which another fluid such as dialysate or oxygen enriched gas flows. The second passageway contains a flat screen wrapped in a fibrous material which distributes the gas uniformly and supports the membranes when the space between them is pressurized with blood. The frames have apertures for conveying blood or other fluid to respectively alternate passageways. Thermoplastically formed protuberances project integrally from the membranes into the blood space for agitating the flowing blood film.

3,684,098

LIQUID FILTER FOR REMOVING FINE CLAY PARTICLES AND THE LIKE

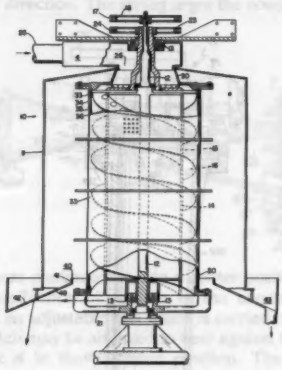
George I. Bentley, Aptos, and Jonas L. Roe, Ben Lomond, both of Calif., assignors to Santa Cruz Aggregates Co., Santa Cruz, Calif.

Filed Aug. 7, 1970, Ser. No. 62,105

Int. Cl. B01d *33/36*

U.S. Cl. 210—374 **2 Claims**

A device for purifying water from very fine particles approaching colloidal size while obtaining a rather dry filter cake. A perforate supporting drum is concentric within an imperforate cylindrical housing wall and radially inset therefrom and is lined with nylon filter cloth. A screw and a cylinder barrier are mounted concentrically within the drum and the edge of the screw is spaced at a predetermined distance between one-sixteenth and five-eighths inch from the filter cloth The drum and filter cloth are rotated together at a speed imparting centrifugal force, and the screw is rotated at a different speed approximating that of the drum. An impeller vane pump introduces slurry to the upper end of the screw outside the barrier. The fine particles are moved by centrifugal force against the filter cloth and build up a filter bed thereon, so that water is filtered through it and passes through the filter cloth and drum into the space outside the drum.



3,684,099

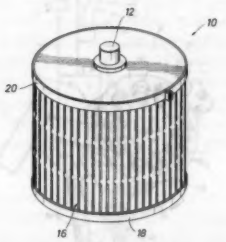
ASSEMBLY ELEMENT FOR PRESS

Carl T. Kiebach, 11540 Raintree Circle, Houston, Tex.

Filed July 21, 1970, Ser. No. 56,888

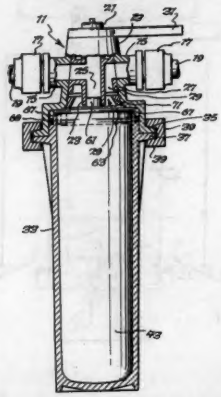
Int. Cl. B01d *33/02*

U.S. Cl. 210—380 **10 Claims**



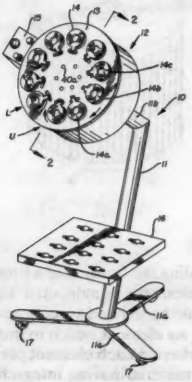
For use in assembling the housing of a press wherein the slot between adjacent elements is subjected to substantial wear and yet must maintain controlled spacing to obtain the desired product separation, an element which in multiple installations forms the housing wherein each element preferably comprises elongate bar stock material having integrally formed spacers of one face thereof so that a plurality of said elements forms the housing and provides the appropriate width slots therebetween, and wherein the bar stock and integral spacers are formed with a step or plateau of uniform thickness which is adapted to be worn away during conventional use of the press housing, and the slots between adjacent bars remain a consistent width.

3,684,100
FILTER ASSEMBLY AND DISPOSABLE FILTER ELEMENT THEREFOR
Sam Close, R.R. 5, Lebanon, Ind.
Filed April 5, 1971, Ser. No. 131,308
Int. Cl. B01d 27/00
U.S. Cl. 210—444 17 Claims



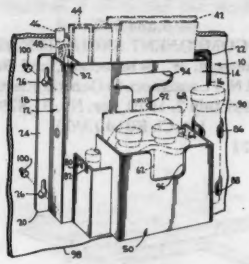
In a filter assembly of the type employing a head for controlling the flow of fluid and a bowl detachably secured to the head, a disposable sanitary filter unit which includes an outer impermeable cup-shaped shell is supported by the bowl, and a filter element within the shell is disposed within the shell in the path of fluid flow.

3,684,101
TOOL LOADER AND UNLOADER
Glenn H. Bradford, 744 Streetsboro Road, Peninsula, Ohio, and John S. Elewski, 2540 St. Francis St., Akron, Ohio
Filed Sept. 21, 1970, Ser. No. 73,713
Int. Cl. A47f 3/08
U.S. Cl. 211—1.5 4 Claims



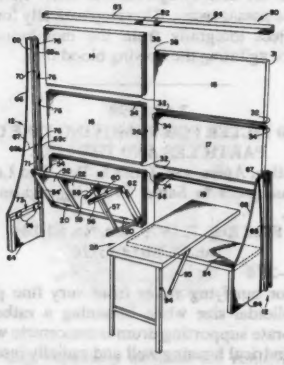
A tool storage device featuring a plurality of tool holding pockets with means to progressively advance said pockets past a loading and unloading station in a pre-determined sequence whereby foolproof tool storage is facilitated. The device includes means for locking the tools in the pockets and automatically releasing the lock when the appropriate pocket reaches the loading and unloading station so that only the appropriate tool can be removed in the appropriate sequence.

3,684,102
COMPARTMENTED NAUTICAL STORAGE RACK
Rudyard M. Colter, 9 Broadview, Madison, N.J.
Filed Jan. 19, 1971, Ser. No. 107,673
Int. Cl. A47f 5/08
U.S. Cl. 211—88 9 Claims



A compartmented nautical storage rack including a first compartment adapted to receive nautical charts and having drainage holes at the bottom thereof, a second compartment adapted to receive binoculars secured to a front wall of the first compartment and having drainage holes in the bottom thereof, the second compartment being centrally disposed on the front wall of the first compartment and having a base aligned with a base of the first compartment to permit the rack to stand by itself, a small compartment formed within the first compartment and adapted to receive dividers and pencils, a small compartment formed adjacent a side wall of the second compartment and adapted to receive a fog whistle and spring clips secured to the front wall of the first compartment adjacent a side wall of the second compartment and adapted to hold a flashlight.

3,684,103
PORTABLE AND COLLAPSIBLE DISPLAY OR EXHIBIT
Alex J. Bellinder, 314 W. Superior St., Chicago, Ill.
Filed Feb. 19, 1970, Ser. No. 12,572
Int. Cl. A47f 5/10
U.S. Cl. 211—177 11 Claims



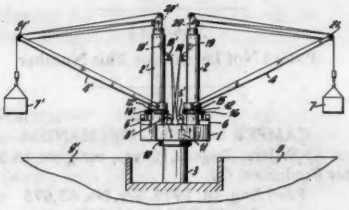
A portable and collapsible display or exhibit comprising a plurality of disassembled parts which may be stored, shipped and transported in a knocked-down condition requiring a

minimum of space and which may be readily set up and assembled to form a display or exhibit in a relatively short period of time, in a manner of approximately five minutes, and which may be repeatedly reused. It comprises a plurality of panel sections detachably secured together to form the display wall and includes side members which are readily attachable to the display wall panels and includes hinged shelves and a collapsible table or counter surface.

3,684,104
TWIN-TYPE SLEWING CRANE

Masao Oda, and Noriaki Kijima, both of Shimonoseki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo

Filed Feb. 3, 1971, Ser. No. 112,282
Claims priority, application Japan, May 15, 1970, 45/41132
Int. Cl. B63b 27/06
U.S. Cl. 212—47 **9 Claims**



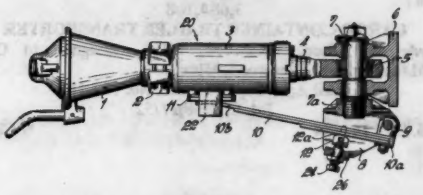
A twin-type slewing crane includes a base rotatably mounted on an upright support which may be positioned, for example, between two holds of a vessel, and driving means for rotating the base about the support. Two upright columns or masts are mounted on the support adjacent opposite ends of a diameter thereof. Each mast is embraced by an annular bearing each of which pivotally mounts a respective jib or boom for swinging movement in a vertical plane, and respective driving means are associated with each annular bearing to swing the associated boom around the axis of the respective mast. A pair of elevating winches are mounted in axial alignment on the base between the masts, and each connected by cables, trained over pulleys mounted on the associated mast, to the respective booms to raise and lower the booms. A pair of winding winches are also mounted in axial alignment on the base and connected by cables, again trained over pulleys mounted on the associated mast and on the outer end of the associated boom, to lifting hooks or the like. Respective clutch means are provided for each pair of winches so that the elevating winches may be interconnected to operate in synchronism and also the winding winches may be interconnected, to operate in synchronism. Such synchronized operation is utilized when the two booms are swung into substantially parallel relation with each other to act as a twin crane in lifting very heavy loads. Certain of the pulleys may be mounted on a member interconnecting the two masts near the upper ends thereof. In a variant embodiment, the booms are raised and lowered by hydraulic actuators which are connected to sources of hydraulic fluid under pressure through valve means which permit independent operation of each hydraulic actuator, in a parallel arrangement, or synchronized operation of the two hydraulic actuators, connected in series relation.

3,684,105
BUFFER COUPLING

Walter Scharfenberg, Sz-Thiede, Germany, assignor to Scharfenbergkupplung GmbH, Salzgitter-Watenstedt, Germany

Filed July 22, 1970, Ser. No. 57,272
Int. Cl. B61g 7/12
U.S. Cl. 213—14 **5 Claims**

A central buffer coupling for rail vehicles having a series connected buffer gear includes a pivot pin which is supported on a rail vehicle in a vertical position. A coupling head including a buffer gear has a connecting arm, which is universally supported on the pivot pin for vertical and horizontal deflection. A support arm of U-shaped configuration is carried at the lower end of the pivot pin and a leaf spring has one end connected to the support arm end and an opposite end connected to the coupling head and it extends substantially in a longitudinal buffer direction. The spring urges the coupling head with

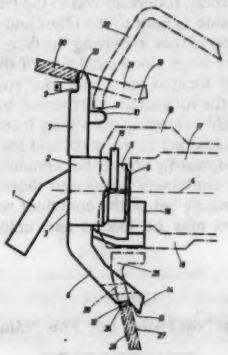


the buffer gear continuously into a center position in respect to vertical deflection. A feature of the construction is the provision of an adjustable rest which is carried on the support arm and which may be adjusted to bear against the leaf spring and support it in the extended position. The construction eliminates stress on the pivot when the suspension slacks and the horizontal position of the coupling is restored by the simple adjusting means which bears upwardly on the leaf spring.

3,684,106
LINE COUPLING CONNECTOR FOR RAILWAY VEHICLES

Pierre Baronnet, and Ernst Katzer, both of Munich, Germany, assignors to Knorr-Bremse KG, Berlin, Germany

Filed April 1, 1971, Ser. No. 130,292
Claims priority, application Germany, April 3, 1970, P 20 15 969.7
Int. Cl. B61g 5/08
U.S. Cl. 213—76 **6 Claims**



A coupling device is attached to the end of an air or steam line of a railway vehicle for coupling the line to a corresponding line on a railway vehicle equipped with either a manually operated box coupler or an automatic central buffer coupler. The device comprises a cylindrical coupler head with a tubular line connection being attached at an angle to one end thereof and the other end having a sealable opening for connection to a line opening. A pair of diametrically opposed arms project radially outwardly from the coupler head with the ends of the arms having abutment surfaces which are engageable with openings in the wall surrounding an automatic central line couplet. One arm has a stop for supporting a protection flap in its open position and the other arm has a downwardly extending extension which rests upon a edge of a

wall opening to position the coupling device. The device also has radial closure guides which are spaced and shaped to correspond with the closure guides on a manual line coupler and are positionable between the guide flanges partially surrounding a line opening on an automatic coupler.

3,684,107

Patent Not Issued For This Number

3,684,108

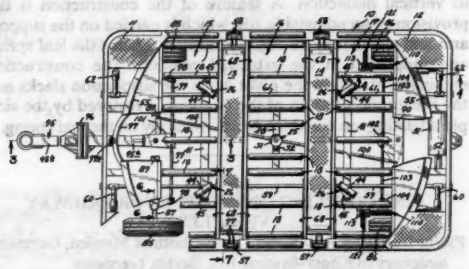
CARGO CONTAINER TRAILER TRANSPORTER

Clyde W. Olson, Glenwood, Minn., assignor to Clyde Machines, Inc., Glenwood, Minn.

Filed April 26, 1971, Ser. No. 137,189

Int. Cl. B60p *1/52*

U.S. Cl. 214—84 **7 Claims**



A frame having four wheels mounted thereunder with a hitch attached thereto for steering movements of all four wheels and brakes attached to the rear wheels and the hitch for operating on the rear wheels when the hitch is raised to a non-operative position, rollers affixed to the frame in rows extending from one side thereof to the other and defining an upwardly directed container receiving surface with manually operable container stops along each side of the trailer, and a generally centrally located pivot and four rollers positioned therearound with the rotational axes thereof oriented horizontally and along radii extending outwardly from the pivot with hydraulic means attached to the pivot and each of the rollers for moving them upwardly above the container receiving surface for allowing containers positioned thereon to be freely rotated or downwardly below the container receiving surface so that containers may be loaded and unloaded from the trailer.

3,684,109

Patent Not Issued For This Number

3,684,110

TILT DOLLY

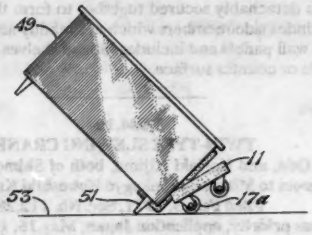
John C. Meyercord, Harlingen, Tex., assignor to Meyercord Industries, Inc., Harlingen, Tex.

Filed Nov. 12, 1970, Ser. No. 88,840

Int. Cl. B62b *3/04*

U.S. Cl. 214—370 **6 Claims**

A dolly characterized by a fully maneuverable, substantially planar structure and body having no handles or lateral protuberances to interfere with passage through doorways, the body having a non-marring, substantially planar upper surface and a short protrusion that is substantially normal to the upper surface for receiving the edge of an article to be tilted thereonto. The body, or a portion thereof, is tiltable to enable engaging the vertical protrusion beneath one edge of the article to be moved. The dolly is lightweight and readily carried by a single



mover. Also disclosed is a preferred method of forming the non-marring surface of the body.

3,684,111

Patent Not Issued For This Number

3,684,112

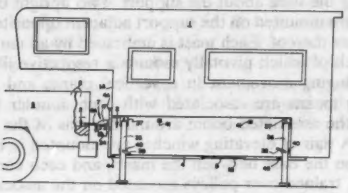
CAMPER LOADING MECHANISM

Gerardus A. Wijers, Eugene, Oreg., assignor to Sportsman Camper Equipment Co.

Filed Aug. 14, 1970, Ser. No. 63,675

Int. Cl. B60p *1/64, 3/32*

U.S. Cl. 214—517 **5 Claims**



A mechanism for loading and unloading camper units from a truck. A truck mounting assembly is carried by the camper and attachable to the truck only when the camper is to be installed upon the truck. The truck mounting assembly is carried by parallel roller chains attached at the ends to opposite ends of the camper. Sprocket train assemblies walk along the entrained roller chains to move the camper into and out of the truck bed. Wheels support the bottom wall of the camper during loading and unloading of the camper.

3,684,113

DUNNAGE CLAMP FOR FORKLIFT TRUCKS

Robert L. Roller, Mt. Vernon, Wash., assignor to Skagit Corporation, Sedro-Woolley, Wash.

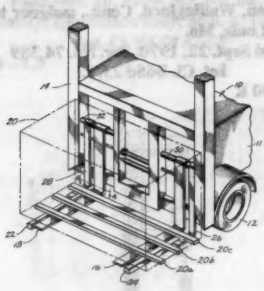
Filed June 12, 1970, Ser. No. 45,746

Int. Cl. B66f *9/14*

U.S. Cl. 214—653 **4 Claims**

An auxiliary fork arrangement is disclosed in connection with forklift trucks for clamping and transporting dunnage simultaneously with the carrying of a load, especially of piles of lumber. Hydraulic actuators are incorporated into the lifting carriage for moving the auxiliary fork members laterally relative to the main forklift members so that any dunnage boards or planks which are inserted under a stack of lumber or other load may be firmly clamped between the main and auxiliary fork members prior to lifting the load and carrying it to its desired location. When the load is deposited at the new location, the dunnage members are then in the desired position

under the load. The actuators are then caused to move the auxiliary fork members away from the main fork members,

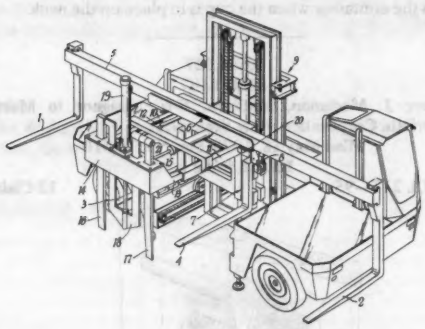


thereby releasing the dunnage members, and the truck can then withdraw the fork members from beneath the load.

3,684,114
FORK LIFT LOAD HANDLING DEVICES

John Travers Cosgrove, London, and Ronald Drake, Wakefield, both of England, assignors to British Railways Board, London and Joshua Shaw & Sons Limited, Batley, England

Filed Jan. 30, 1970, Ser. No. 7,044
Int. Cl. B66f *9/18*
U.S. Cl. 214—654 **6 Claims**



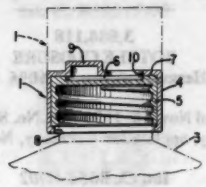
A fork-lift load handling device having in addition to its horizontal load carrying tines, a plurality of downwardly pointing substantially vertical tines disposed adjacent the free ends of the horizontal tines, the vertical tines being vertically adjustable and variable in their horizontal spacing from the free ends of the horizontal tines. The vertical tines may be supported for vertical adjustment in a carriage which is horizontally adjustable along guides connected to supporting structure for the horizontal tines.

3,684,115
SAFETY CLOSURE

Richard W. Birch, Macedonia Road, Kent, Conn.

Filed Feb. 1, 1971, Ser. No. 111,197
Int. Cl. A61j *1/00*; B65d *55/02*
U.S. Cl. 215—9 **3 Claims**

A childproof safety closure of two parts, one part having a skirt with internal screw threads to form a conventional screw cap closure, the second part being an overcap completely covering the threaded closure member and being freely rotatable in relationship thereto, said overcap having on its top a projecting stud and a similar shaped opening which

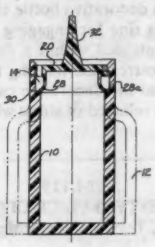


serves as a key for unscrewing the inner closure member of another closure of similar construction.

3,684,116
CHILD RESISTENT SAFETY CLOSURE AND CONTAINER

Daniel P. Duffy, 209 Boston Ave., Massepequa, L.I., N.Y.

Filed Feb. 19, 1971, Ser. No. 116,766
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **11 Claims**

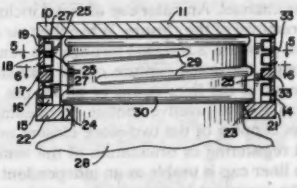


A child resistant closure and container in which the safety closure cap fits within the interior of the top of the container. The inner periphery of the container is provided with inwardly projecting locking bars that fit into corresponding locking slots in the cap. The latter is further provided with an upwardly projecting finger piece that requires a substantial amount of prehensile strength to manipulate. The closing flange on the bottom surface of the cap, or on the container, is resilient, thereby normally biasing said cap in an upward direction.

3,684,117
DIAL-ACTUATED SAFETY CAP

Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill., and Kenneth C. Rolin, Sr., 28 Hillside Avenue, Grayslake, Ill.

Filed March 18, 1971, Ser. No. 125,592
Int. Cl. B65d *55/14*
U.S. Cl. 215—9 **13 Claims**



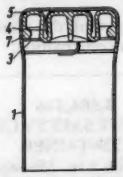
A safety cap for a container or bottle which must be dialed to register a release position by manipulating multiple parts to coincide at the release position and thereby enable the cap to be opened or removed and comprising an assembly adapted

for installation on a screw top container or bottle as the primary closure or as a safety closure in association with a screw cap on the bottle.

3,684,118
BOTTLE CLOSURE

Fritz Brumme, Hermannstrasse 7, 6096 Raunheim (Main), Germany

Filed Nov. 10, 1970, Ser. No. 88,295
Claims priority, application Germany, Nov. 14, 1969, G 69 44 379.4
Int. Cl. B65d *41/02*
U.S. Cl. 215—38 R 6 Claims

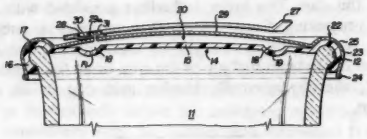


There is disclosed a decorative bottle closure having a sealing cap with a sealing ring for engaging a bottle mouth, the sealing cap being contained within a decorative cap which serves to inwardly prestress the holding ring. A tear-off strip may be formed around the decorative cap in such a position that the sealing cap is relieved of stress when the tear-off strip is removed.

3,684,119
VENTED TWO-PIECE CLOSURE

Robert O. Burroughs, Toledo, Ohio, assignor to Owen-Illinois, Inc.

Filed Jan. 26, 1971, Ser. No. 109,844
Int. Cl. B65d *51/16*
U.S. Cl. 215—56 29 Claims

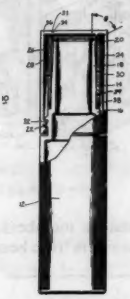


The disclosed invention is a plastic liner cap in a two-piece closure on containers for beer, carbonated beverages and the like. The liner cap top panel over the mouth area of the container includes a vent means comprised of an annular channel formed in the cap and a series of spaced vertical slits disposed annularly in the channel. An outer cap of metal includes a tear strip for hand removal of the closure. When the tear strip is initially ruptured, pressure is released through the vent slits and conveyed through the initial rupture of the tear strip. Axial flexing movement of the liner opens or closes the vent slits. The vent means assures positive venting on opening the closure and allows capping of the two-piece closure on the container without registering or orientation of the vents and the tear strip. The liner cap is usable as an independent reclosure device after the container is opened. A second embodiment provides a seal of liner and overcap adjacent the opposite margins of the channel. This minimizes space between the liner and overcap for product to collect and cause a reaction before the container is opened.

3,684,120
PACKAGE FOR DISPENSING MEASURED AMOUNTS OF LIQUID

Everett C. Beeman, Wallingford, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 22, 1970, Ser. No. 74,389
Int. Cl. B65d *23/12*
U.S. Cl. 215—100 R 11 Claims

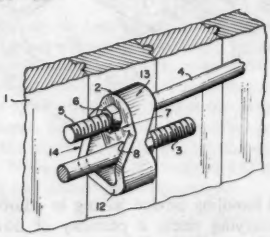


A composite package for dispensing dosage amounts of liquids such as pharmaceuticals which includes a container, preferably of one piece construction, which has an elongated neck with a protruding wiping lip at its upper end, a measuring cup for superposition over the neck in an upside down position, the sidewall thereof adapted to contact the lip as it is placed over the neck so as to cause residual liquid left on the sidewall after use to drain back into the container. An overcap closes the container when the cup is in place on the neck.

3,684,121
SILO LUG

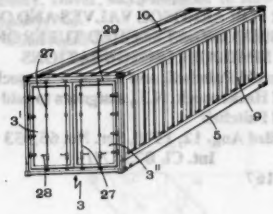
Wallace J. Macemon, Madison, Wis., assignor to Martin Marietta Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,310
Int. Cl. B65d *9/38*
U.S. Cl. 217—95 12 Claims



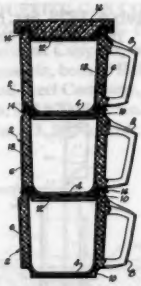
A cast silo lug combining compact structure with superior strength has a body portion with two holes therein, a curved lip section associated with each hole and a mounting section for positioning the lug against the wall of a silo. The holes are positioned at opposite ends of the body portion. One lip section extends outward from the body portion and around the part of the circumference of a hole facing the end of said body portion. The second lip section extends in the same manner outward from and around the other hole but on the opposite side of the body portion. The threaded end portions of silo encircling rods are passed through the holes in opposing directions, the lip sections associated with each hole serving to support the rod passing through the hole. On the side of each hole opposite the lip section, a bearing surface is provided for the retaining nut used to secure and tighten the encircling rods to the wall of the silo.

3,684,122
TRANSPORT CONTAINER
Antonio Bonomi, Piazza Mercato 7, Pinzolo, Italy
Filed Nov. 10, 1970, Ser. No. 88,315
Claims priority, application Italy, Sept. 4, 1970, 69981 A/70
Int. Cl. B65d *87/00*
U.S. Cl. 220—1.5 5 Claims



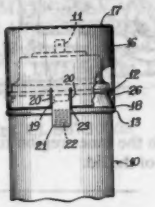
Improvements in a collapsible transport container of the type having a bottom, longitudinal side walls, a rear wall and a detachable cover, the improvements essentially comprising inner connecting rods attachable to elongated side wall supporting lugs and the cover to stiffen the container in the operative position, outer connecting rods to hold the collapsed container together in a pack of reduced dimensions, sealing means between the various parts of the container, hinge means between the bottom and the walls including the front door to enable the various walls to be turned down and to be placed one above the other, fitting means between the cover and the side walls, and rod and latch means on the door for firmly closing it, the various parts of the container having the form of a battlement in cross section to increase its strength.

3,684,123
STACKED INSULATED CUPS
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Aug. 10, 1970, Ser. No. 62,426
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R 2 Claims



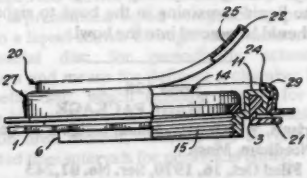
This application discloses cups formed from plastic heat insulating material wherein the bottom of each cup is relatively thin while its side wall is relatively thick. Cups formed in accordance with the invention may be stacked and by virtue of their construction there will be less heat transfer through the side wall than through the bottom whereby the liquid contained in each cup in the stack will be maintained at a desired temperature for relatively long periods of time.

3,684,124
TAMPER-PROOF OVERCAP FOR CAN
John S. Song, 117 N. Lincoln Ave., Addison, Ill.
Filed Sept. 10, 1970, Ser. No. 71,176
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 4 Claims



A cup shaped plastic cover has a plurality of inwardly extending lips adjacent the open end. The upper face of these lips is substantially normal to the inner wall and the lower face tapers from the inner wall to the upper face. The lower face cams the the cap outwardly so that it easily slips over a bead on the can after which the upper face engages the bead to lock the cap against a retraction movement. At one side of the cap there is a tear strip extending upwardly from the open end and having a handle extending outwardly from its lower edge. One of the lips is on this tear strip and the remaining lips are opposite the tear strip lip and at the sides thereof. Above the tear strip are inwardly projecting horizontal reinforcing ribs.

3,684,125
CONTAINER CLOSURE HAVING SEALING CAP AND FASTENING RING
Jeremiah Laurizio, New Providence, N.J., assignor to American Flange & Mfg. Co. Inc., New York, N.Y.
Filed Aug. 7, 1970, Ser. No. 62,043
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 6 Claims

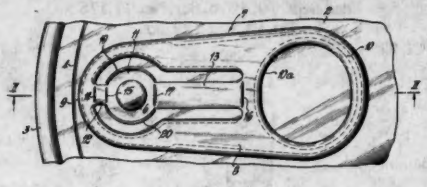


A container closure assembly made up of a synthetic plastic closure flange, a closure plug and an overlying synthetic plastic cap seal including a metal securing ring. The closure assembly is applied as a unit to an upstanding neck formation surrounding a container wall opening and secured in place by clinching the metal securing ring radially inwardly about is periphery. Access to the closure plug is achieved by tearing away the center portion of the cap seal leaving the remainder of the closure assembly firmly secured to the container.

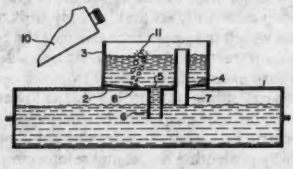
3,684,126
EASY-OPENING CAN END
Werner Reichert, Hardtweg 35, 5334 Ittenbach, Germany
Filed Jan. 22, 1971, Ser. No. 108,854
Claims priority, application Germany, April 7, 1970, P 20 16 513.3
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 8 Claims

The specification discloses a tear open can or container lid in which the lid has a score line defining a weakened region surrounding an area to be torn out. Connected to the area to

be torn out is a tab which has a rigid outer region and a rigid inner region near one end of the outer region and flexibly connected thereto with the inner region fixedly connected to the area to be torn out of the lid.

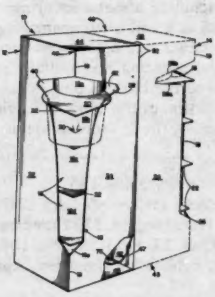


3,684,127
FUEL RESERVOIR WITH FILLING SIGNAL
Frederick W. Kruse, Jr., 128 Atlanta Place, Pittsburgh, Pa.
Filed Jan. 26, 1971, Ser. No. 109,761
Int. Cl. B65b *3/00*
U.S. Cl. 220—86 R **9 Claims**



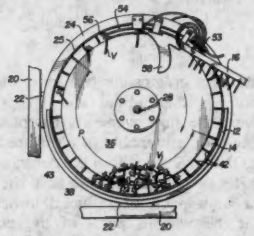
A fuel tank has a pouring bowl on top of it for receiving a liquid being discharged from a supply container. The bottom of the bowl has an outlet that opens into the tank, with a spout extending from the outlet down into the tank. A vent tube extends from inside the tank upwardly above it, and the bowl has a signal opening in its bottom communicating with the inside of the tank above the lower end of the tube, which is higher in the tank than the lower end of the spout. When the liquid level in the tank rises around the spout high enough during filling to close the lower end of the vent tube, air in the tank will start to escape through the signal opening and produce a string of bubbles in the liquid remaining in the bowl to signal that no more liquid should be poured into the bowl.

3,684,128
UNIT DOSAGE PACKAGE
Robert C. Crisafi, Winchester, Mass., assignor to Damon Corporation, Needham, Mass.
Filed Oct. 16, 1970, Ser. No. 81,243
Int. Cl. B65h *1/00*
U.S. Cl. 221—63 **18 Claims**



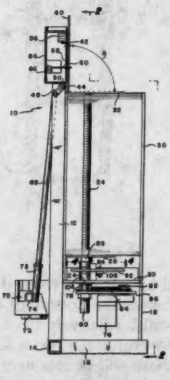
An article storing and dispensing package has an enclosure-forming carton that stores articles ordered in a stack. The carton has a slot in one side corner that runs along the stack and it has a short window enlarging the slot width. Resiliently pliable panels of the carton adjacent the slot and window hold the slot in a normal condition where it is too narrow for articles to pass through it. But the panels yield apart without permanent deformation or tearing, to allow removal of an article, when the article is pulled outward from the enclosure at the window.

3,684,129
SORTER FOR AEROSOL VALVES AND OTHER CLOSURES HAVING ATTACHED TUBES OR OTHER SIMILAR CONFIGURATIONS
Alfred Loy; Harold Paitchell, and Kazmier Wysocki, 293 Hudson St., all of Hackensack, N.J., assignors to said Wysocki, by said Loy and Paitchell
Filed Aug. 12, 1970, Ser. No. 63,053
Int. Cl. B23q *7/12*
U.S. Cl. 221—167 **14 Claims**



A sorter and orienting device for elongated aerosol valves and other special closures which have dip tubes, extensions, or other mechanical components of similar shape, etc., and are haphazardly arranged in a bin, having an inclined, rotatable disk bottom having circumferentially spaced, radially directed slots upwardly through which cam-actuated vertically disposed baffles are projected to pick up one or more valves and orient them by gravity while elevating them to pick-off rails in which area the baffles are withdrawn to present a smooth surface for an orienting bar and pick-off rails to ride against.

3,684,130
GARMENT HANGER DISPENSING MACHINE
Clinton A. Winslow, 2321 N.W. 12th St., Oklahoma City, Okla.
Filed July 6, 1970, Ser. No. 52,530
Int. Cl. B23q *7/04*
U.S. Cl. 221—212 **23 Claims**



A hanger dispensing machine used in laundering establishments wherein one of a plurality of hangers in a carton is auto-

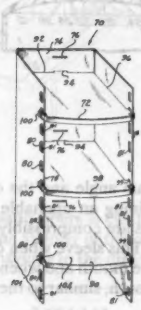
matically selected by a hanger engaging and positioning member and moved to a station where a garment can readily be placed thereon.

3,684,131

MERCHANDISING MACHINE WITH SIZE-ADJUSTABLE COMPARTMENTS

Albert Kurimsky, Dover, N.J., assignor to Rowe International Inc., Whippany, N.J.

Filed April 22, 1970, Ser. No. 30,899
Int. Cl. B65h 31/20
U.S. Cl. 221—242 11 Claims



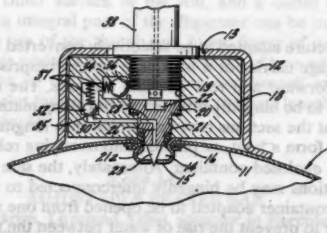
The merchandising machine disclosed is of the type in which one or more of a plurality of doors are released for opening on receipt of proper credit to allow access to one storage compartment normally closed by its door. The doors are electrically and mechanically interlocked, so that opening of one door disables the remaining doors from opening. In such machines interchangeable modules are provided whereby storage compartments and doors of interchangeable height may be utilized. Correspondingly sized door locking and release mechanism mounting panels are provided for each module. In this way, a machine can be changed to vend a smaller number of large items, or larger number of small items by modifying the shelf compartment sizes as desired and inserting door control panels of corresponding sizes.

3,684,132

DISPOSABLE LIQUEFIED GAS CONTAINER AND BURNER OUTLET FITTING THEREFOR

Mattheus Johannes Martinus Coppens, and Livinus Eduardus Maria Jozephus Mannaerts, both of Heide-Kalmthout, Belgium, assignors to Inland Steel Company, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,789
Int. Cl. B67b 7/24
U.S. Cl. 222—5 3 Claims



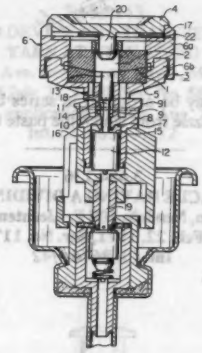
A disposable liquefied gas container and removable reusable fitting therefor wherein provision is made for attaching the fitting to the container, destroying the container seal, and preventing either inflow or outflow of gas through the fitting by means of a pair of oppositely directed check valves. Attachment of a burner coupling device to the fitting opens one of the check valves to permit flow of gas from the container to a gas appliance.

3,684,133

DEVICE FOR AUTOMATICALLY AND PERIODICALLY SPRAYING A PRESSURIZED LIQUID

Taisho Iketani, 4-41-6, Nogota, Nokano-ku Tokyo, Japan

Filed June 11, 1971, Ser. No. 152,235
Claims priority, application Japan, Dec. 18, 1970, 45/113008
Int. Cl. B67d 5/08
U.S. Cl. 222—54 6 Claims



An improved device for automatically and periodically spraying a pressurized liquid comprises a spray nozzle connected to a liquid source through valve means, a heat-responsive bimetal disc for periodically actuating spraying mechanism and means for defining a chamber for containing the bimetal disc, which defining means for bimetal disc chamber is provided with a vent means capable of adjusting ventilation area thereof, whereby the device is actuated at preselected time intervals for periodical spray.

3,684,134

Patent Not Issued For This Number

3,684,135

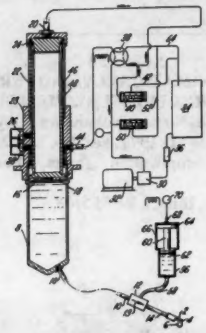
PASTE DELIVERY APPARATUS

Murray Arnold Schorr, Bletchley, and Derek Henry Dyett, London, both of England, assignors to Molins Machine Company Limited, London, England

Filed July 29, 1970, Ser. No. 59,282
Claims priority, application Great Britain, Aug. 4, 1969, 38,892/69
Int. Cl. G01f 13/00
U.S. Cl. 222—252 11 Claims

In apparatus to supply an uninterrupted stream of paste, particularly for use in a continuous-rod cigarette-making machine, paste is normally delivered from a main container, but when the main container is empty, the paste supply is maintained from an auxiliary container. The main container is refilled while the auxiliary container is operating and when paste is again delivered from the main container, part of the

paste goes to recharge the auxiliary container while further paste is simultaneously delivered from the apparatus. The auxiliary container may be arranged in series between the main container and a nozzle from which the paste is discharged.



3,684,136

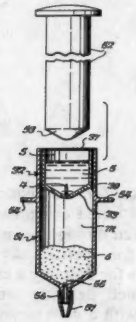
RECEPTACLE HAVING A DIVIDING WALL

Erwin H. Baumann, Nendeln 108 F, Liechtenstein

Filed Feb. 22, 1971, Ser. No. 117,638

Int. Cl. B67d 5/42

U.S. Cl. 222—386 **25 Claims**



A receptacle having at least two chambers for receiving and subsequently mixing the ingredients of dental preparations or other products. The pair of chambers are initially separated from each other by a dividing wall which has at least one weakened, substantially linear portion or notch arranged to rupture and form a gap for passage of one of the ingredients therethrough when bending or buckling forces are exerted upon the dividing wall, but upon termination of the action of such forces the gap formed will be automatically closed again to prevent reverse flow of ingredients.

3,684,137

CLOSURE ASSEMBLY FOR COLLAPSIBLE TUBE

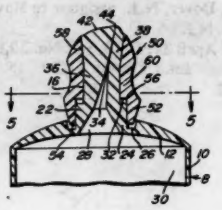
Dean George Coleman, P. O. Box 172, Grants, N. Mex.

Filed Aug. 7, 1970, Ser. No. 62,034

Int. Cl. B65d 25/40

U.S. Cl. 222—490 **4 Claims**

A collapsible tube for toothpaste or the like having its discharge end provided with a nozzle characterized by a cylindrical neck merging into a slightly enlarged tapered head and provided at its inward end with an enlarged collar-like base. This base is united with a grooved portion of the tube's discharge end and the outstanding ledge has cams acting on an internal shoulder carried by a thimble-like sleeve surrounding the base, neck and head. This sleeve is rotatable and slidable. The nozzle is bifurcated to provide a pair of jaw-like furcations whose confronting faces are internally grooved in a manner to provide a dentifrice ejecting passage. The passage is inclined at an oblique angle and the outer end is provided with opposed lips defining an openable and closable mouth. The jaw-like furcations are compressibly squeezable by a rigid encompassing sleeve. This sleeve when oscillated or turned in one direction opens the mouth and when turned in an opposite direction closes the mouth, similar to the action of a chuck.



3,684,138

Patent Not Issued For This Number

3,684,139

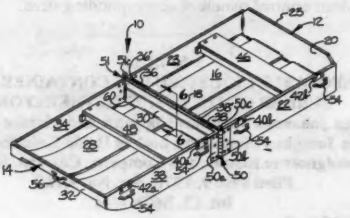
LUGGAGE CARRIER AND BOAT STRUCTURE

Harold R. Johnson, Monroe, N.C., assignor to H. R. Johnson Construction Co., Inc., Monroe, N.C.

Filed Jan. 11, 1971, Ser. No. 105,452

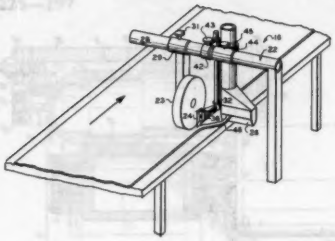
Int. Cl. B60r 9/04

U.S. Cl. 224—42.01 **7 Claims**



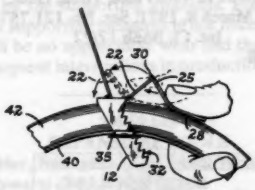
A structure adapted to be selectively converted into an auto top luggage carrier or a boat, and which comprises generally similar forward and rear box-like sections. The sections are adapted to be hingedly interconnected along mating end walls such that the sections may be pivoted into longitudinal alignment to form a boat, or pivoted into overlying relationship to form an enclosed container. Alternately, the side walls of the two sections may be hingedly interconnected to form an enclosed container adapted to be opened from one side thereof. In order to prevent the rise of water between the two abutting end walls when the structure is employed as a boat, a laterally extending exterior groove is positioned in each end wall, the two grooves being aligned in face to face relationship to define a channel intermediate the walls.

3,684,140
CUTTER AND CUTTING METHOD
Raymond G. Voss, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Aug. 3, 1970, Ser. No. 60,579
Int. Cl. B23b 5/04
U.S. Cl. 225—2 10 Claims



A batt of thermoplastic fibers is cut by a hot wire, the batt being compressed in the vicinity of the cut and a tension being applied to the batt transverse to the direction of the cut.

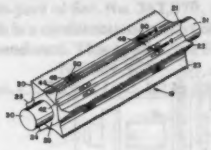
3,684,141
DISPENSER FOR TAPE MATERIAL
Hugh Hall, c/o Mr. David L. Haney, Box 282, Urbana, Ohio
Substitute for Ser. No. 476,620, Aug. 2, 1965, abandoned. This application Jan. 25, 1971, Ser. No. 109,241
Int. Cl. B26f 3/02
U.S. Cl. 225—65 9 Claims



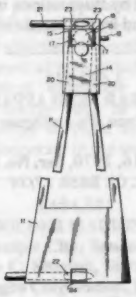
A tape dispensing device formed as a unitary body includes a central dispensing portion with a slot through which tape is withdrawn and wing members integrally connected to opposite sides of the dispensing member and arranged to fold along opposite sides of a roll of tape material to form a saddle-like arrangement; a retainer holds the dispensing member against the outer surface of the roll, and a cutter member formed as an integral part of the dispenser can be moved, as through the use of the thumb and index finger of one hand, into operative position for severing a length of tape while leaving a portion of the tape remaining on the roll extending through the slot for easy grasping when the next length of tape is to be withdrawn.

3,684,142
ADJUSTABLE BEATER BAR
David B. Jackson, Loveland, Ohio, assignor to Hercules Incorporated, Wilmington, Del.
Filed Aug. 3, 1970, Ser. No. 60,681
Int. Cl. B26f 1/20
U.S. Cl. 225—97 1 Claim

A rotatable beater bar, used for fibrillating film, comprises serrated edges mounted thereon in such a manner that the edges can be removed therefrom or adjusted according to the type of fibrillation desired.



3,684,143
PROCESS AND DEVICE FOR TRANSFER OF TEXTILE YARN AT HIGH SPEED
Paul Juppet, 173, Ave. Barthelemy Buyer, 69-Lyon 5, France
Filed July 27, 1970, Ser. No. 58,585
Claims priority, application France, Aug. 7, 1969, 6927224
Int. Cl. B65h 17/32
U.S. Cl. 226—97 5 Claims

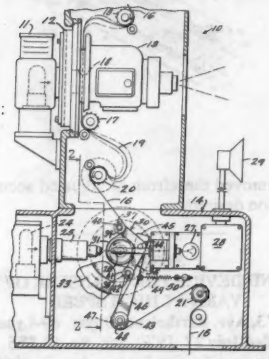


An improved process and device for transferring textile yarn at high speeds is provided. The improved process is characterized by the yarn as well as the air injected by the pneumatic nozzle being guided from the output of the nozzle to the subsequent zone of treatment. The improved process is useful for the start-up of textile machines, the conveying of yarn from one floor to another, and the automatic transfer of high speed yarn from one treatment device to another.

3,684,144
FILM TENSIONING DEVICE FOR MOTION PICTURE PROJECTORS
Angelo Boudouris, Sylvania, Ohio, and Geofrey T. Gray, Lambertville, Mich., assignors to Eprad Incorporated, Toledo, Ohio
Filed Nov. 2, 1970, Ser. No. 86,023
Int. Cl. B65h 17/42
U.S. Cl. 226—114 5 Claims

A device for tensioning motion picture film against a rotating drum to reduce audio distortion caused by fluctuations in film speed. A curved bar is pivotally mounted at its center with ends positioned on opposite sides of the drum. Guide rolls are attached to the ends of the bar with each guide roll rotating about an axis parallel to the axis about which the drum rotates. A substantially constant length of film extends from a driven sprocket, around one guide roll, the drum and the other guide roll, and over a second driven sprocket. The pivot to which the

bar is mounted is biased to tension the film against the drum. Small fluctuations in the length of film between the two



sprockets are dampened by fluctuations in the position of the bar and the guide rolls and by the inertia of the drum.

3,684,145

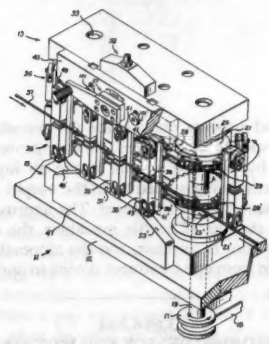
RECTILINEAR FEED APPARATUS

Carlton G. Jenkins, Warren, Pa., assignor to Sylvania Electric Products Inc.

Filed Nov. 16, 1970, Ser. No. 89,704

Int. Cl. B65h *17/34*

U.S. Cl. 226—173 **9 Claims**



An apparatus for feeding strip material in a rectilinear direction utilizing a pair of opposed stationary cams having substantially parallel dwell portions which contact pairs of cam followers located within the housings of pairs of opposed clamping assemblies. The cam followers are in direct contact with the jaws of the clamping assemblies and cause the jaws to engage the material once contact is made between the followers and the dwell portions of the stationary cams. The opposed clamping assemblies are affixed at predetermined distances to a pair of chain members which in turn are driven by sprockets affixed to a rotary drive shaft. An external power source provides the method of driving the apparatus.

3,684,146

FEED DEVICE FOR A METAL STRIP

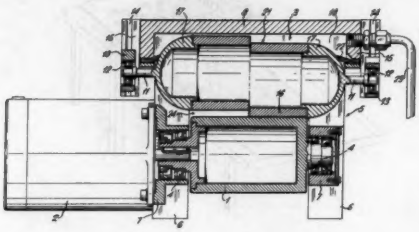
Renzo Fedrigo, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Oct. 12, 1970, Ser. No. 80,077

Claims priority, application Italy, Oct. 20, 1969, 53752 A/69

Int. Cl. B65h *17/22*

U.S. Cl. 226—176 **3 Claims**



A device for feeding a metal strip to a numerically controlled tool, blanking press or the like is disclosed comprising a pair of rollers between which the strip is nipped and fed forward by applying rotational drive to the rollers. Compressed air, acting upon the upper surface of one of the rollers urges the rollers together, creating the nipping pressure. A stepping electric motor provides the rotational drive which causes the feed movement of the strip.

3,684,147

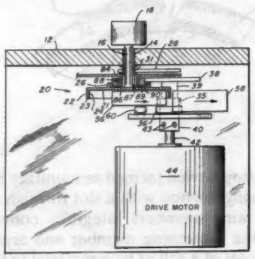
BI-DIRECTIONAL DRIVE MECHANISM WITH HIGH SPEED REVERSE

Floyd R. Ysbrand, 208 E. 19th st., Tulsa, Okla., and Richard W. Pembroke, 3681 E. 49th Place, Tulsa, Okla.

Filed March 8, 1971, Ser. No. 121,757

Int. Cl. B65h *17/22*

U.S. Cl. 226—178 **11 Claims**

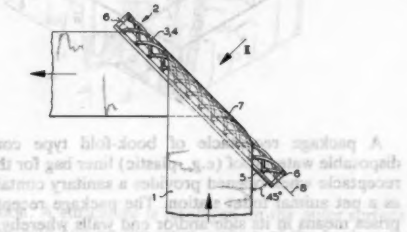


In this invention a capstan shaft carries a capstan pulley with two flanges. A first flange provides first and second cylindrical drive surfaces, while a second flange, of smaller diameter, provides a single cylindrical drive surface. A pivoted plate carries two spaced freely rotatable drive transmitting idlers. When the plate is pivoted in a first direction, a first of said drive idlers connects a motor pulley first drive surface in drive relation with a first surface of said first flange to drive said shaft in a first direction. When the plate is pivoted in a second direction a second of said drive idlers connects the motor pulley second drive surface in drive relation with the second surface of said first flange to drive said shaft in a second direction. A third drive idler is adapted to place a motor pulley third drive surface in drive relation with a drive surface of said second flange.

3,684,148
TURNING DEVICE FOR DEFLECTING MOVING FLEXIBLE WEBS OF PAPER OF PLASTIC FILM

Hartmut Upmeier, Zum Kahlen Berg 11, 4542 Tecklenburg, Germany

Filed Oct. 13, 1970, Ser. No. 80,308
Claims priority, application Germany, Oct. 17, 1969, P 19 52 475.5; June 29, 1970, P 20 32 065.4
Int. Cl. B65h *23/32*
U.S. Cl. 226—197 12 Claims

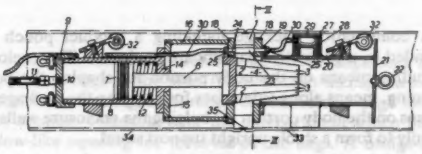


According to the invention, a turning device for deflecting moving flexible webs comprises a curved surface about which the web can be passed and which is defined by a plurality of individual supporting elements formed from curved shafts having a rotatable covering of which the web-supporting portions are movable at the same speed as and in the same direction as the web. In this way, the web can be passed over the supporting elements along a helical line corresponding to the required deflection angle without having to slide over the curved surface defined by the supporting elements. Positive guiding of the individual supporting elements is not necessary and therefore there will be no appreciable wear and the device will not give rise to frequent interruptions in production.

3,684,149
EXPANSIBLE TOOLS

Allan R. Ambler, Newcastle, New South Wales, Australia, assignor to Stewarts and Lloyds Limited

Continuation of Ser. No. 736,462, June 12, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 92,241
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 4 Claims

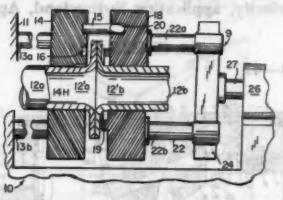


An expansible tool for aligning abutting tube ends has a piston and cylinder for moving a wedge relative to jaws for urging the jaws outwardly against the tube, an inflatable clamp expansible against the inner surface of one of the tubes and operable independently of the jaws, and adjustable guide wheels for supporting the tool in the tubes.

3,684,150
TUBE WELDING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 362,870, April 27, 1964, abandoned, which is a continuation-in-part of Ser. No. 44,486, May 18, 1960, abandoned. This application Feb. 10, 1969, Ser. No. 801,923
Int. Cl. B23k *21/00*; B23p *3/02*
U.S. Cl. 228—3 7 Claims

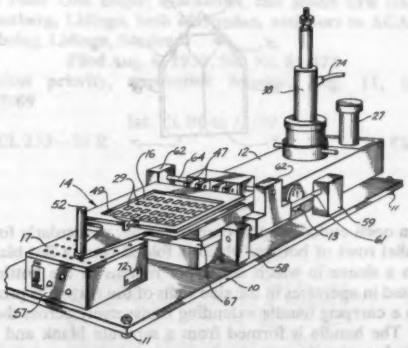


An apparatus and method are provided for butt welding and sealing sections of tubing together. The apparatus includes welding dies which circumscribe the tubing and operate against abutting flanges or flared end portions of aligned tubes to effect a circumscribing weld between the abutting tube flanges. In one form, power operated means urges the dies towards each other with sufficient force to compress and pressure weld the flanges together. In another form, welding pressure is developed by manual means including levers to provide a sufficient mechanical advantage to weld the flanges together. Auxilliary energy such as ultrasonic energy, resistance electrical energy or other form of energy may be brought into play to cooperate in the welding action.

3,684,151
SOLDER MACHINE

Per Aron Burman, Temple City; Sandor F. Goldschmied, Fullerton, and Mahesh C. Sharma, Sierra Madre, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 8, 1969, Ser. No. 848,453
Int. Cl. B23k *1/00, 5/22*
U.S. Cl. 288—19 10 Claims



A soldering machine particularly useful for removing integrated circuit components for printed circuit boards is described. The apparatus includes a substantially closed bath of molten solder and a short passage leading upwardly from the closed chamber and having an open upper end. A printed circuit board holder and positioning frame is positioned over the open end of the passage as guided by a template so that a circuit element such as an integrated circuit package has its soldered leads positioned over the opening. When so posi-

tioned a plunger displaces a portion of solder in the closed chamber and the molten solder level in the passage rises to contact the leads to be soldered. Such a machine has particular utility for heating leads of a single component on a printed circuit board for removing the component from the board.

3,684,152

WELDING WIRE ADVANCING UNIT

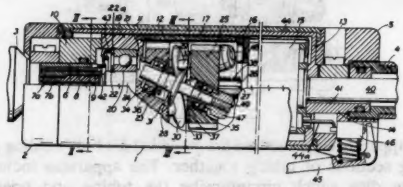
Knut Folke Ingemar Boden, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden

Filed April 21, 1970, Ser. No. 30,386

Claims priority, application Switzerland, April 25, 1969, 5885/69

Int. Cl. B23k *1/00*

U.S. Cl. 228—41 **5 Claims**



A wire advancing unit of the type in which the feed rolls are set at an angle to the wire and revolve about the axis of the wire. The feed roll axles are supported by a pair of rotor members which are angularly displaceable with respect to each other, spring means being provided to urge said rotor members in a direction causing the feed rolls to approach the common axis of rotation of the rotor members.

3,684,153

ATTACHED HANDLE FOR CARRIER CARTON

Josef Detzel, Kempten, Allgau, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed March 29, 1971, Ser. No. 129,080

Claims priority, application Germany, April 2, 1970, G 70 11 943.6

Int. Cl. B65d *5/46, 25/28*

U.S. Cl. 229—52 A **2 Claims**

An open ended tubular carrier carton, particularly for two parallel rows of bottles, which is folded from a flat blank to form a sleeve in which the upper regions of the bottles are located in apertures in the side walls of the carton, is provided with a carrying handle extending transversely across the carton. The handle is formed from a separate blank and has a central portion for gripping by hand and tongues at each end which are located inside the carton, ears extending from each of the tongues engaging the inside of the carton. Apertures at the ends of the handle also receive and locate at least one bottle in each of the rows.

3,684,154

Patent Not Issued For This Number

3,684,155

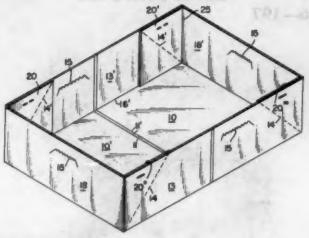
COLLAPSIBLE SANITARY CONTAINER AND CONTAINER LINER

Daniel O. Smith, Fairport, N.Y., assignor to Mobil Oil Corporation

Filed Aug. 5, 1970, Ser. No. 61,122

Int. Cl. B65d *25/14*

U.S. Cl. 229—14 B **4 Claims**



A package receptacle of book-fold type containing a disposable waterproof (e.g., plastic) liner bag for the package receptacle when opened provides a sanitary container useful as a pet animal toilet station. The package receptacle comprises means in its side and/or end walls whereby, when the opened package is lined with the disposable liner bag such that the walls of the open end of the liner bag are folded over the top edge of the side and end walls of the opened package receptacle, a portion of the folded over portion of the liner bag is securely held in place by said means to effectuate a useful sanitary container.

3,684,156

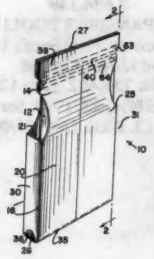
COMBINATION PACKAGE

John G. Fettinger, Norwich, Conn., and Guelfo A. Manizza, Blauvelt, N.Y., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,273

Int. Cl. B65d *5/40, 5/54*

U.S. Cl. 229—14 B **13 Claims**



A combination package including a product pouch surrounded by a protective paperboard enclosure. The enclosure including means on the body portion for shaping the pouch opening, means along side edges for gripping the package and means on the body portion for bulging the enclosure walls outwardly to form a stable upright support stand.

3,684,157

FOOD CONTAINER CONSTRUCTION

Robert W. Mendez, 505 N. Lake Shore Dr., Chicago, Ill.

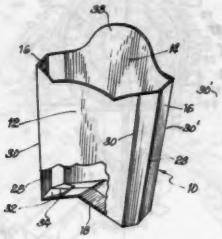
Filed Sept. 14, 1970, Ser. No. 71,687

Int. Cl. B65d *5/00, 5/36*

U.S. Cl. 229—16 **7 Claims**

A container construction comprising front, back, side and bottom walls and an open top. The respective walls are

separated from each other by means of fold lines, and additional fold lines extend across the bottom and side walls whereby the construction can be folded into a flat configuration. A still further fold line extends across the bottom wall between the front and back walls. When the bottom is pushed upwardly along this fold line, the container will lock in the



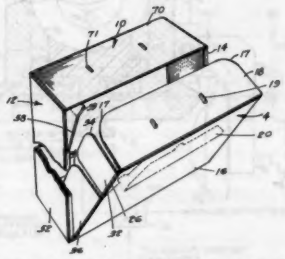
open position. A caricature is displayed on the outer surface of the front wall and on the inner surface of the back wall. When the side walls are cut away after use of the container, the caricature provides a toy which will change in appearance when the front and back walls are moved relative to each other.

3,684,158

CONTAINER AND METHOD FOR DISPENSING ARTICLES

Gary D. Harris, 36250 Lake Shore Blvd., Eastlake, Ohio

Filed Nov. 13, 1970, Ser. No. 89,269
Int. Cl. B65d *5/54, 85/62*
U.S. Cl. 229—17 RS **13 Claims**



A container and method for storing and/or dispensing articles, such as bags or the like. The container includes a compartment for holding a plurality of interfolded bags and a cover member closeable over the compartment which has a window-like opening for removal of the bags. A bridge-like abutment member is angularly disposed interiorly of the compartment for biasing selective folded corner portions of the bags outwardly for dispensing one-at-a-time from the container.

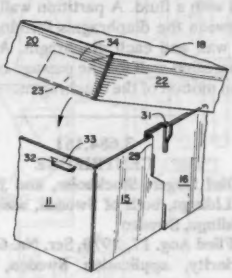
The method includes progressively folding a plurality of superimposed stacked bags in a predetermined symmetric pattern so that one of the corners of the bags contains only folded portions that can be disposed in abutting engagement with the bridge-like member of the container for subsequent dispensing of the bags therefrom.

3,684,159

CARTON WITH LOCKING MEANS FOR RECLOSABLE COVER

George H. Wolfe, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed July 16, 1970, Ser. No. 55,437
Int. Cl. B65d *45/00, 5/66*
U.S. Cl. 229—45 **7 Claims**



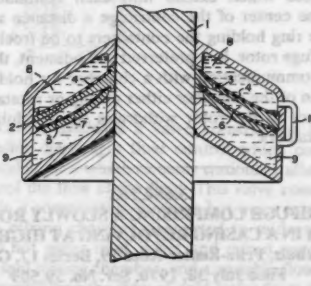
A carton formed from a single blank of foldable paperboard or the like having a reclosable cover which is hinged to the upper edge of the rear wall panel of the carton proper or tray portion and provided with front and end apron panels, which, when the cover is closed, respectively overlap the front and end wall panels of the carton. Locking tabs cut from the front wall panel are hingedly connected to said panel along their upper edges, and their lower edges normally tend to protrude slightly outwardly from the face of said panel. Glue flaps, which secure the cover apron end panels to the inside of the cover front apron panel at the forward corners of the cover when the carton is erected, are provided with cut-out areas positioned for receiving and engaging the protruding edges of the locking tabs when the cover is in closed position. For gaining access to the closed carton, an upward pressure on the front apron panel of the cover causes an inward and upward force on the locking tabs, causing them to snap or cam out of the cut-outs of the glue flaps to release the locking engagement.

3,684,160

CENTRIFUGE HAVING A ROTATION-SENSITIVE PUMPING DEVICE

Hans Peter Olof Unger, Stockholm, and Johan Eric Hayden Westberg, Lidingo, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 6, 1970, Ser. No. 61,573
Claims priority, application Sweden, Aug. 11, 1969, 11119/69
Int. Cl. B04b *11/00*
U.S. Cl. 233—20 R **6 Claims**



A rotation-sensitive pumping device for pumping liquid from one part of a centrifuge to another during rotation

thereof comprises a diaphragm mounted on the centrifuge rotor and moveable from one position to another as a function of rotor speed to pump the liquid. The diaphragm is disposed at an angle between two rotating chambers of the centrifuge and, at a given angular velocity of the rotor, the diaphragm is moved by centrifugal force from one position to the other to pump the liquid from one chamber to the other. The diaphragm may include two flexible diaphragms separated by a cavity filled with a fluid. A partition wall may be located in the space between the diaphragms forming cavities between the partition wall and each diaphragm. An aperture is provided in the partition wall for the passage of fluid between the two cavities on motion of the diaphragms.

3,684,161

CENTRIFUGE

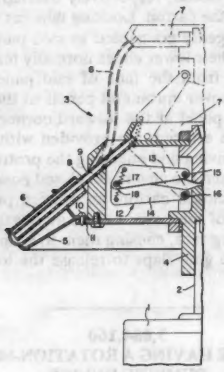
Hans Peter Olof Unger, Stockholm, and Johan Eric Hayden Westberg, Lidingo, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 17, 1970, Ser. No. 64,354

Claims priority, application Sweden, Aug. 22, 1969, 11689/69

Int. Cl. B04b *9/12, 9/14*

U.S. Cl. 233—26 **5 Claims**



A centrifuge including flexible tubes in fluid communication with containers for a sample being centrifuged and having portions extending into the containers. The containers are held in a ring which is detachably secured to the centrifuge rotor. The device includes means for withdrawing those portions of the tubes which extend into each container inwardly towards the center of the centrifuge a distance sufficient to permit the ring holding the containers to be freely raised off the centrifuge rotor. In a preferred embodiment, the tubes are in liquid communication with a chamber for holding a liquid and motion of the chamber either axially or rotatably or both with respect to the rotor withdraws the conduits from the liquid containers.

3,684,162

CENTRIFUGE COMPRISING A SLOWLY ROTATING DRUM IN A CASING REVOLVING AT HIGH SPEED

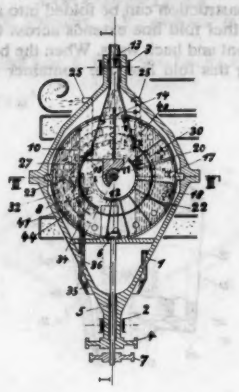
Herbert Schulz, Fritz-Reuter-Allee 29, Berlin 17, Germany

Filed July 30, 1970, Ser. No. 59,509

Int. Cl. B04b *1/00*

U.S. Cl. 233—32 **12 Claims**

A centrifuge having a slowly rotating drum within a case with the latter revolving at high speed and the case has cells



and outflow passages at the rear side of the centrifuge and at separating cells thereof.

3,684,163

ROTOR DEVICE HOUSING FOR ANALYTICAL ULTRACENTRIFUGE

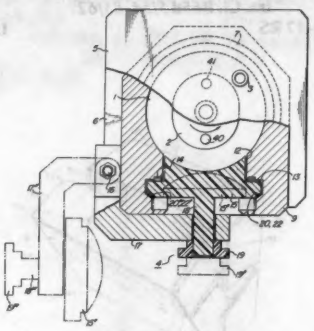
Takesaburo Hashimoto, Katsuta-shi, Japan, assignor to Hitachi-Ltd., Tokyo, Japan

Filed Nov. 28, 1969, Ser. No. 880,756

Claims priority, application Japan, Dec. 2, 1968, 43/104329

Int. Cl. B01d *21/26, 43/00, 45/12*

U.S. Cl. 233—1 B **4 Claims**



A rotor is accommodated and supported in a rotor chamber for high speed rotation therein. The wall of the rotor chamber is formed with an opening larger than the rotor and the opening is air-tightly closed with a cover. When the rotor is to be exchanged, the cover is removed and the rotor is exchanged through the opening.

3,684,164

APPARATUS FOR PUNCHING, PRINTING AND VERIFYING DATA CARDS

Cecil J. Davis, West Chester, Pa., assignor to Bridge Data Products, Inc., Philadelphia, Pa.

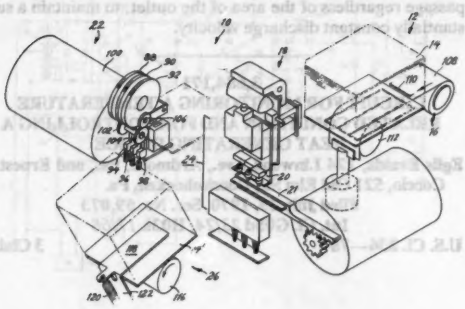
Filed Aug. 5, 1970, Ser. No. 61,195

Int. Cl. B26f *1/04*; G06k *1/02*

U.S. Cl. 234—34 **16 Claims**

A data card is moved incrementally through a punching station. A punch and die carrier at the station is mounted for

movement incrementally in a path generally perpendicular to the path of movement of the card, to position punches and dies with respect to the card. Card reading apparatus part of which is attached to and adjacent to the punch carrier verifies



the positions of punched openings. Means are provided for applying printed characters to the card simultaneously with punching, the printed characters being aligned with the punched openings.

3,684,165

Patent Not Issued For This Number

3,684,166

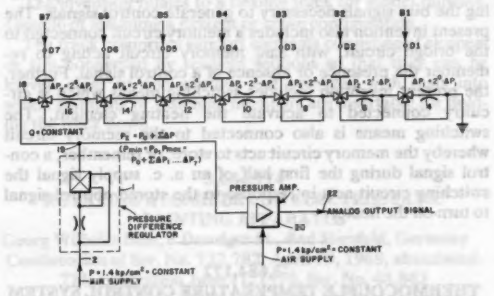
PNEUMATIC DIGITAL-TO-ANALOG CONVERTER WITH STORAGE

Siegfried Kruger, Berlin, Germany, assignor to Shering, A. G. Berlin und Bergkamen, Berlin, Germany

Continuation-in-part of Ser. No. 81,724, Oct. 19, 1970. This application April 5, 1971, Ser. No. 131,372

Int. Cl. G06d *5/00*

U.S. Cl. 235—200 **5 Claims**



A device, including storage, which converts digital pneumatic signals into an analog pneumatic signal. A geometric series of flow resistances and logical switching units are used to provide the conversion.

3,684,167

INTERNAL TEMPERATURE RESPONSIVE MEAT PROCESSING APPARATUS

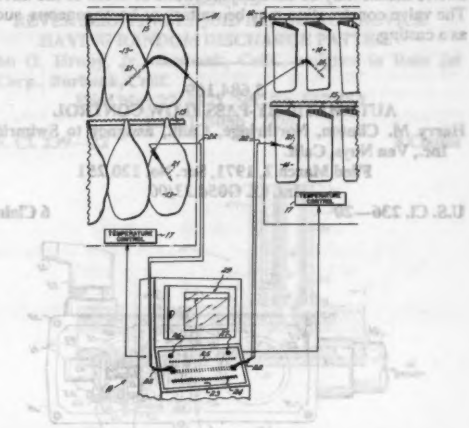
Thomas N. Linblad, Cincinnati, Ohio, assignor to Fulton Industries, Inc., Cincinnati, Ohio

Filed Aug. 20, 1970, Ser. No. 65,437

Int. Cl. G05d *23/22*

U.S. Cl. 236—1 **9 Claims**

An apparatus for processing meat is provided with a plurality of internal temperature sensing probes for insertion into meat products at different points spaced about a meat processing chamber. A control system operates to terminate a step in the meat processing operation when the internal temperatures of a certain number of the meat products reach a



preset threshold temperature. The probes are sequentially scanned and their readings compared with the threshold temperature and the results of the comparison are stored for use by the control system.

3,684,168

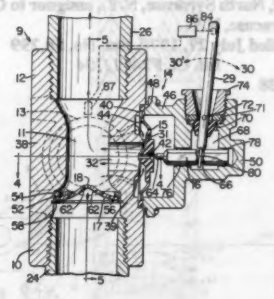
MIXING VALVE CONSTRUCTION, SYSTEM AND METHOD

Harold A. McIntosh, South Pasadena, and Gordon K. Slocum, Downey, both of Calif., assignors to Robertshaw-Controls Company, Richmond, Va.

Division of Ser. No. 716,557, March 27, 1968, abandoned, and a continuation of Ser. No. 18,362, Feb. 26, 1970, Pat. No. 3,610,279. This application Feb. 20, 1970, Ser. No. 16,631

Int. Cl. G05d *11/16*

U.S. Cl. 236—12 A **7 Claims**



This application discloses a valve construction having a modulating pilot diaphragm fluid control which cooperates with an adjustable pilot which remains stationary after adjustment to control the flow of the fluid. This valve construction may be used in a construction having a hot water inlet, a cold water inlet, a mixing chamber connected to said cold water inlet and said hot water inlet, a hot and mixed water outlet connected to said mixing chamber, and a variable flow control construction controlling the flow of cold water from said cold water inlet to said mixing chamber. This variable flow control construction may be a modulating control construction, so that the water flow from the cold water inlet may be modu-

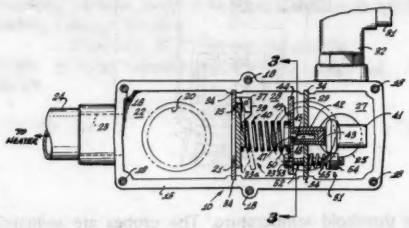
lated to the desired volume to produce the desired mixture of hot and cold water at the mixed water outlet. Other fluids, instead of hot and cold water, may be controlled and mixed by the valve construction. More than two fluids may enter more than two inlets in the valve construction. A flexible variable orifice means may be used adjacent one or more of the inlets. The valve construction may be unitary or homogeneous, such as a casting.

3,684,169

AUTOMATIC BY-PASS FLOW CONTROL

Harry M. Clinton, Northridge, Calif., assignor to Swimrite, Inc., Van Nuys, Calif.

Filed March 2, 1971, Ser. No. 120,251
Int. Cl. G05d *23/00*
U.S. Cl. 236—20 **6 Claims**



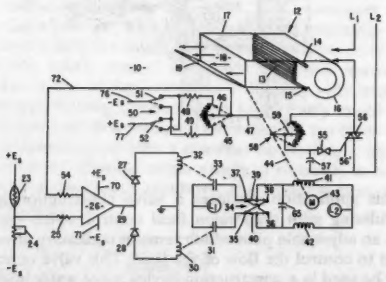
A swimming pool heater having a by-pass control including a spring-loaded by-pass valve formed by a hinged valve plate, and means for increasing and decreasing the spring force tending to close the by-pass valve in response to changes in the temperature of the flow out of the heater, thereby to avoid overheating as a result of an input pressure drop or an input temperature rise. The temperature-responsive means include a heat-expansible and contractible member connected to a base element for the spring, and two spring return units for assisting in relieving the spring force as the member contracts.

3,684,170

AIR CONDITIONING APPARATUS

Ronald L. Roof, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 27, 1970, Ser. No. 58,299
Int. Cl. F24f *11/04*
U.S. Cl. 236—38 **6 Claims**



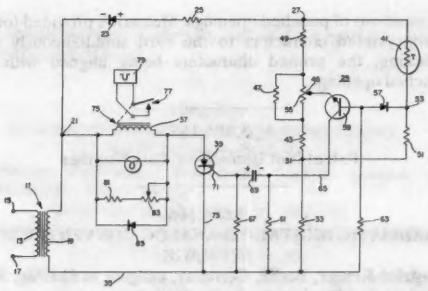
Apparatus for supplying treated air to an enclosure, including heat exchanger through which a heat exchange medium flows and a fan arranged to route air to be treated over the heat exchanger in heat transfer relation with the medium. The temperature of the air in the enclosure is sensed and the area of the outlet provided for discharging the treated air into the enclosure is modulated in response to the temperature of the enclosure. A variable control signal, the magnitude thereof being related to the area of the outlet, is generated and is supplied to a control operable to vary the speed of the fan motor to maintain a substantially constant static pressure in the air passage regardless of the area of the outlet, to maintain a substantially constant discharge velocity.

3,684,171

CIRCUIT FOR MONITORING A TEMPERATURE RELATED CONDITION AND FOR CONTROLLING A HEAT GENERATING DEVICE

Egils Evalds, 124 Linwood Ave., Ardmore, Pa., and Ernest F. Coccio, 521 Old Elm St., Conshohocken, Pa.

Filed July 29, 1970, Ser. No. 59,073
Int. Cl. G05d *23/24;* **H03k** *17/68*
U.S. Cl. 236—78 **3 Claims**



The present invention employs a heat sensitive element to form one leg of a bridge circuit, with the bridge circuit providing the bias signals necessary to generate control signals. The present invention also includes a memory circuit connected to the bridge circuit, with said memory circuit acting to remember the presence or absence of a control signal. Further, the present invention includes switching means which is circuitry connected to activate the heating element. The switching means is also connected to the memory circuit whereby the memory circuit acts to store, or remember, a control signal during the first half of an a. c. supply signal the switching circuit acts in response to the stored control signal to turn on the heater.

3,684,172

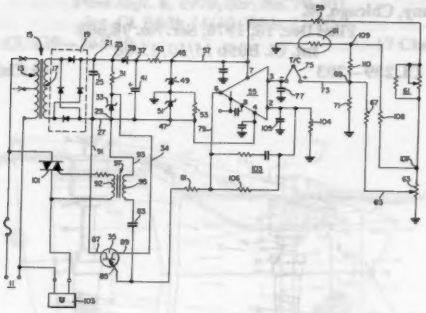
THERMOCOUPLE TEMPERATURE CONTROL SYSTEM

Egils Evalds, 124 Linwood Ave., Ardmore, Pa.

Filed Oct. 8, 1970, Ser. No. 79,048
Int. Cl. G05d *23/22*
U.S. Cl. 236—78 **7 Claims**

The present system provides a circuit wherein a direct-current amplified difference signals is produced in response to an extremely small difference signal being developed by comparing the small voltage developed across a thermocouple, (acting as a temperature sensor) aNd a selectable variable voltage representing the desired temperature of the location being monitored. The amplified direct-current difference voltage is attenuated and fed back to an operational amplifier to develop a stable difference signal input thereto. In addition, the amplified direct-current difference voltage is applied to the control element of a switching circuit. The switching circuit has a pulsating direct-current signal applied to the input-output ele-

ments and switches to turn on the heating means in response to the value of the applied difference signal (which is applied



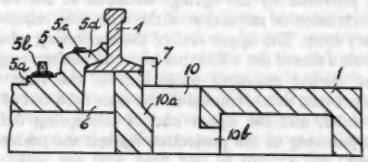
to the control element) exceeding a predetermined percentage of the value of the applied pulsating direct-current signal.

3,684,173

FLEXIBLE TRACK FOR MINIATURE ELECTRIC TRAINS

Pietro Casadio, via Jacopo di Paolo 43, Bologna, Italy

Filed Sept. 18, 1970, Ser. No. 80,521
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **2 Claims**



The invention relates to a flexible track for model railways, capable of assuming a straight or curve configuration.

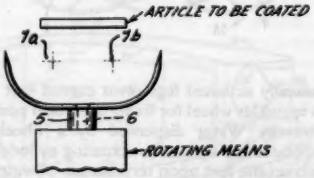
The track comprises support elements consisting of sleepers or ties connected by resilient sections so that they can be moved close to one another and provided with seats into which clamping or fastening members are insertable for holding the track down.

3,684,174

ROTATING ATOMIZER FOR ELECTROSTATIC PAINTING APPARATUS

Georg Wilhelm Bein, 6 Danziger St., Bad Hersfeld, Germany

Continuation of Ser. No. 722,782, April 19, 1968, abandoned.
This application June 11, 1970, Ser. No. 48,843
Int. Cl. B05b *5/00*; F23d *11/28*
U.S. Cl. 239—15 **6 Claims**



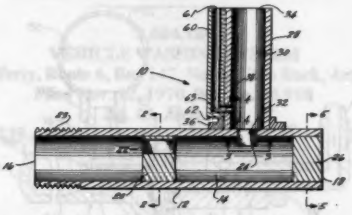
A rotating atomizer for electrostatic painting apparatus, characterized by an open ended shell or dish having a spray edge defining a round, oval, or rounded rhombus shaped surface, when flattened, curved concavely towards the object to be coated.

3,684,175

REVERBERATING LIQUID DISCHARGE DEVICE HAVING RANDOM DISCHARGE PATTERN

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Filed May 27, 1971, Ser. No. 147,483
Int. Cl. B05b *17/08*
U.S. Cl. 239—22 **8 Claims**



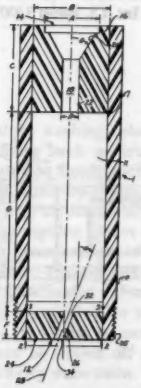
A liquid discharge device, having no moving parts, randomly pulsates liquid discharged therefrom, so as to randomly vary the shape and configuration of the discharge pattern. Switching between discharge patterns occurs entirely automatically at random intervals.

3,684,176

PULSATION IMPACT SPRAY NOZZLE

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Filed July 27, 1970, Ser. No. 58,361
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **8 Claims**



A nozzle for producing an impacting pulsating spray of liquid comprises a hollow elongate tube having an inner chamber and a pair of spaced inlet and outlet plugs fitted one in each opposite end of the tube thereby to define the chamber. The outlet plug has an axial funnel-shaped duct defined therethrough with the flare of the duct open to the exterior of the nozzle. The inlet plug has a duct defined therethrough with its mean cross-sectional area substantially less than the mean cross-sectional area of the chamber. Liquid is fed into the chamber through the inlet plug and emerges out

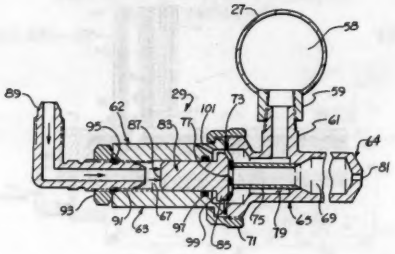
of the nozzle through the outlet plug as a randomly pulsating conical spray having a high impacting force.

3,684,177

SPRAYING APPARATUS AND CONTROL SYSTEM THEREFOR

Conrad R. Barlow, Redondo Beach, Calif., assignor to Transland Aircraft, Inc., Harbor City, Calif.

Filed Sept. 10, 1970, Ser. No. 71,100
Int. Cl. B05b *17/02*; B64d *1/18*
U.S. Cl. 239—171 **12 Claims**



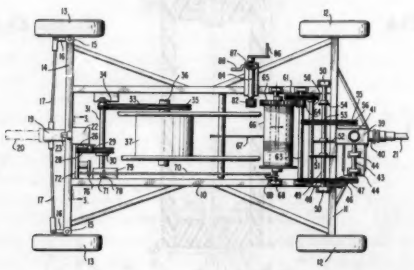
A spraying device comprising a spray boom, a plurality of nozzles attached to the spray boom and a pressure responsive valve for each of the nozzles. Each of the valves has an open position and a closed position for, respectively, permitting and preventing the flow of sprayable fluid through the associated nozzle. The valves are actuated hydraulically and when opened, sprayable fluid is supplied through the boom and the valves to the nozzles.

3,684,178

TRAVELING AGRICULTURAL SPRINKLER

Richard F. Friedlander, P. O. Box 847, Moultrie, Ga.

Filed March 23, 1971, Ser. No. 127,165
Int. Cl. B05b *3/00*
U.S. Cl. 239—189 **13 Claims**



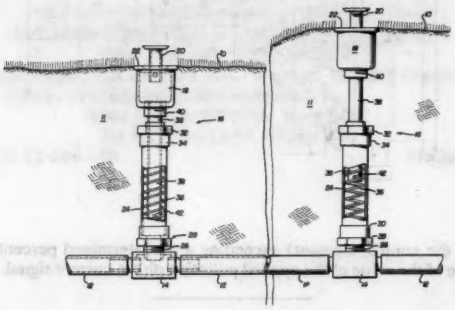
A self-propelled heavy duty sprinkler derives motive power from a supply of water under pressure which also feeds the rotary sprinkler head. A water-operated turbine wheel and gearing drive a cable wind-up drum which winds up an anchored cable to propel the sprinkler. An independent power train adapted to be driven from a tractor power take-off drives a hose reel on the machine. An improved steering arrangement is provided together with means to automatically de-activate the sprinkler drive gearing at the end of a traverse. A braking and anti-backlash device for the cable drum is included.

3,684,179

SPRINKLER HEAD RISER MECHANISM

Edward Fischer, Saline, and William J. Trickey, East Lansing, both of Mich., assignors to Superior Pipe Specialties Company, Chicago, Ill.

Filed Dec. 16, 1970, Ser. No. 98,608
Int. Cl. B05b *15/10*, *15/08*
U.S. Cl. 239—203 **3 Claims**



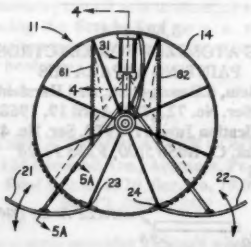
A riser mechanism for a lawn sprinkler head which includes a head-bearing riser tube telescoped for vertical adjustment within a stationary supply tube disposed underground, a spiral spring is longitudinally disposed in the stationary tube and the telescoping tube has a radial projection engageable with the threads provided by the spring. Rotation of the riser tube causes extension or retraction of the riser tube relative to the stationary tube. The upper end of the stationary tube is provided with a sleeve nut which has an inner surface engageable with the thread engaging projection of the riser tube to thereby prevent axial removal of the riser tube out of the stationary tube, and the upper end of the spring deflects to prevent jamming of the projection against the under-surface of the nut.

3,684,180

SPRINKLER SYSTEM WHEEL STRUCTURE

Keith E. Gorzell, P.O. Box 502, Lake City, Calif.

Filed May 17, 1971, Ser. No. 143,884
Int. Cl. A01g *25/02*
U.S. Cl. 239—212 **10 Claims**

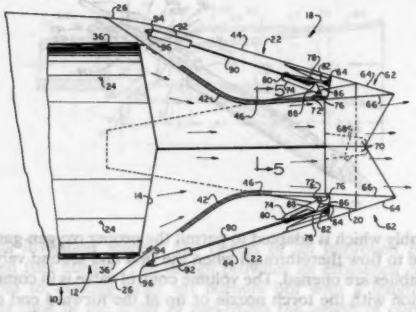


Hydraulically actuated legs pivot curved feet radially outward of a sprinkler wheel for fixing the wheel position as upon uneven terrain. Water dispensed by a wheeled sprinkler system operates the hydraulic actuating cylinder hereof and springs retract the feet upon termination of water pressure to the system.

3,684,181

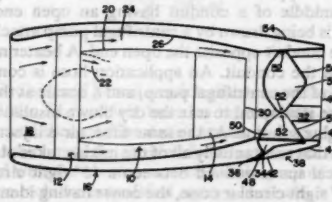
Patent Not Issued For This Number

3,684,182
VARIABLE NOZZLE FOR JET ENGINE
Richard L. Maison, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Sept. 8, 1970, Ser. No. 70,301
Int. Cl. B63h 11/10; B64c 15/00
U.S. Cl. 239—265.19 17 Claims



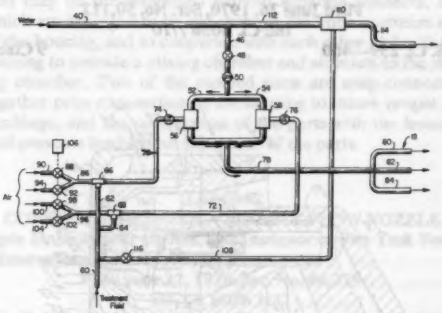
Invention is embodied in an airplane having at least one jet engine with its longitudinal axis substantially parallel to the longitudinal axis of the airplane and with a tail pipe discharging rearwardly to produce reaction thrust. A variable nozzle is provided for attachment co-extensively to the tail pipe to receive and control the exhaust gas stream. The nozzle comprises a pair of fixedly mounted side plates laterally spaced and having parallel opposed planar faces, between which are mounted a pair of nozzle sections having predetermined profiles in continuation of the profile of the tail pipe. The outer marginal side walls of the sections are in slidable sealed engagement with the opposed faces of the side plates, and are movable toward and away from the engine axis between stowed and deployed positions to vary the cross sectional area of the exhaust gas flow path and to modify the combined profile of the tail pipe and nozzle for varying flight regimes so that optimum flow-pressure requirements may be satisfied. In addition, the sections may be independently actuated for differential movement which alters the effective thrust axis and provides directional control moments to aid in steering the aircraft or for emergency steering control. Direction of movement of sections at installation determines whether pitching or yawing movements are produced. In multiple engine installations both pitch and yaw control may be provided.

3,684,183
THRUST CONTROLLING APPARATUS
Richard B. Baerresen, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Sept. 16, 1970, Ser. No. 72,579
Int. Cl. B63h 11/10; B64c 15/00
U.S. Cl. 239—265.19 13 Claims



Aft portion of jet engine shroud extends rearward beyond exit end of jet nozzle to surround and control exhaust gas stream. Passages through aft portion of shroud provide exit path for exhaust stream for thrust reversal. Closure members for passages move forward into notches to block flow, and are deployed aft to allow flow. A blocker door swings on transverse pivot from stowed position inward of forward end of each passage through intermediate modulating positions to full blocking position wherein doors join to form forwardly convex cone directing entire gas flow outwardly through passages exposed by deploying closure members. Forward ends of closure members mate with doors to form continuous deflecting surface and impart forward flow component to deflected gases to produce reverse thrust. Closure members and blocker doors may be operated independently if desired to provide variable thrust control during flight.

3,684,184
VEHICLE WASHING SYSTEM
Tom Lafferty, Route 6, Box 147, North Little Rock, Ark.
Filed Nov. 12, 1970, Ser. No. 88,918
Int. Cl. A62c 5/04
U.S. Cl. 239—311 3 Claims

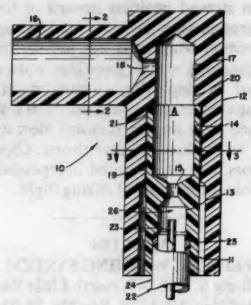


A system is disclosed for washing vehicles, and particularly large commercial vehicles such as trucks, which includes means for adding treatment fluids such as pickling acid or liquid soap to the wash water by means of fluid eductors. A variable amount of air may be entrained within the treatment fluid line to reduce the suction effect of the eductor, and hence draw a greater or lesser amount of treatment fluid to be mixed with the wash water. The amount of air entrained may be controlled by solenoid-actuated valves associated with the air inlet. A single pump is provided for pressurizing all of the fluid lines; additionally, a bypass is provided for the pump whereby the system may be drawn off any source of water under pressure, such as a city watermain.

3,684,185
VALVE ACTUATOR
Vassilios Milcos, Suffern, N.Y., assignor to Avon Products, Inc.
Filed Nov. 13, 1970, Ser. No. 89,234
Int. Cl. B05b 7/32
U.S. Cl. 239—337 5 Claims

A valve actuator for use in admixing and discharging at least two materials codispensed by a valve from an aerosol container comprising an intake section with a conduit for receiving the materials from the valve and a discharge section for

dispensing the mixed materials, the intake section being snugly received in a cavity in the discharge section and the



conduit combining with the cavity to form an elongate admixing and expansion chamber in the actuator.

3,684,186

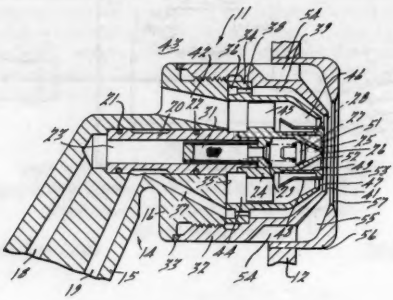
AERATING FUEL NOZZLE

William F. Helmrich, Birmingham, Mich., assignor to Ex-Cell-O Corporation, Highland Park, Mich.

Filed June 26, 1970, Ser. No. 50,112

Int. Cl. B05b 7/10

U.S. Cl. 239—400 **9 Claims**



An aerating fuel nozzle for a gas turbine engine combustion chamber. The nozzle has an annular fuel swirl chamber from which the fuel issues in a spray cone, blending with inner and outer layers of swirling air. Air from the engine compressor is mixed with the fuel to obtain a high degree of air-fuel blending close to the nozzle, thus promoting cleaner and more complete combustion.

3,684,187

MACHINE MOUNTED CUTTING TORCH

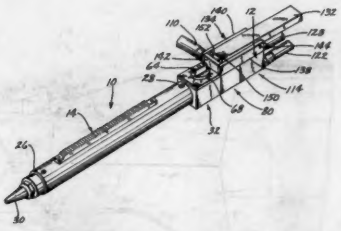
Berwyn E. Etter, Box 11965, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 2,048, Jan. 12, 1970, Pat. No. 3,604,631. This application June 5, 1970, Ser. No. 43,810

Int. Cl. F23d 13/38

U.S. Cl. 239—414 **8 Claims**

A machine mounted cutting torch comprising a valve block assembly and a head assembly. First, second and third valve assemblies are provided in the valve block assembly and are connected to sources of oxygen, oxygen and industrial gas respectively. The valve assemblies are actuated by a trigger lever pivotally mounted on the valve block assembly which is movable between first, second and third positions. All of the valve assemblies are normally closed when the trigger lever is in its first position. The second and third valve assemblies are opened when the trigger lever is moved to its second position so that oxygen and industrial gas can flow therethrough respectively. The first, second and third valve assemblies are opened when the trigger level is in its third position. The second and third assemblies are in communication with a rotatable volume control valve mounted in the valve block assembly which is adapted to permit the proper oxygen-gas mixture to flow therethrough when the first and second valve assemblies are opened. The volume control valve is in communication with the torch nozzle or tip at the forward end of the head assembly. The torch also includes an oxygen line which connects the first valve assembly and the nozzle so that additional oxygen can be supplied to the nozzle when the actual cutting operation is to be performed.



3,684,188

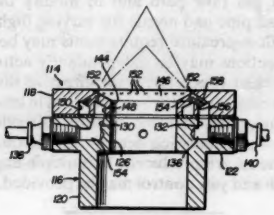
INSULATION APPLICATOR AND METHOD

Ray J. Miller, Harsens Island, and Gerald W. Trabbic, Marshall, both of Mich., assignors to Comfort, Inc., Battle Creek, Mich.

Filed Aug. 20, 1970, Ser. No. 35,998

Int. Cl. F23d 11/16

U.S. Cl. 239—422 **5 Claims**

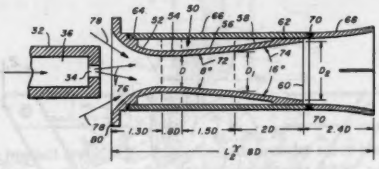


Apparatus and method for applying particulate insulation to ceilings, walls, structural supports and the like. The apparatus includes a hopper for dry cellulose or other fibrous insulation material, an agitator mounted in the hopper near the bottom thereof, and a screw conveyor mounted in a trough in the bottom of the hopper. The forward end of the conveyor opens into the middle of a conduit having an open end through which air is being drawn by a centrifugal pump attached to the end of the conduit opposite the open end. A beater mounted is situated in the conduit. An application hose is connected to the outlet of the centrifugal pump, and a nozzle at the free end of the hose is adapted to mix the dry blown insulation with an aqueous glue solution. At the same time, air is injected in such a manner that substantially all of the mixing takes place in that intraconical space defined between a 45° right circular cone and a 60° right circular cone, the cones having identical bases defined by circularly arranged air injection ports located about the periphery of the nozzle and directed inwardly to define the intraconical space.

3,684,189
PRESSURIZED FUEL BURNER

Robert D. Reed, and John S. Zink, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 129,768, March 31, 1971.
This application May 12, 1971, Ser. No. 142,617
Int. Cl. B05b 7/06
U.S. Cl. 239—425.5 8 Claims

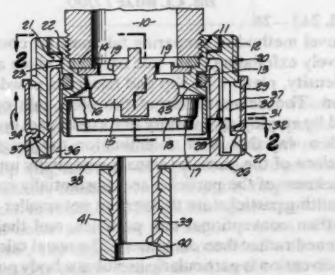


This invention teaches the design of an improved pressurized fuel burner. The design provides an efficiency comparable to existing prior art burners but with a length of burner tube of the order of two-thirds the length of current prior art burner tubes. In this design the attachment of the burner tip is made simpler and cheaper than in conventional burners by welding the burner tip to a standard pipe adapted to snugly fit the burner tube at both inlet and outlet ends.

3,684,190
QUICK DISCONNECT

James H. Bletcher, Pacific Palisades, and Jack K. Rauh, Hacienda Heights, both of Calif., assignors to Trust of Ralph E. Bletcher, deceased; Frederick Robertson; Gary Robertson; Lenora Bucknell; Richard J. Bletcher; Marcia Liston, trustee for Daniel E. Liston; Carol Ann Liston; James H. Liston; Hazel Brondum; Marcia Liston and Ernest H. Bucknell, part interest to each

Filed Oct. 29, 1970, Ser. No. 84,972
Int. Cl. E03c 1/08
U.S. Cl. 239—428.5 6 Claims



There is disclosed herein a quick disconnect device for faucets, and the like, which have an aerator attached at the discharge end thereof. The device enables an accessory spout member, which may be coupled for example to a hose, to be connected with the aerator secured to the spout of the faucet. The device includes a modified aerator shell which is secured to the spout, a body member coupled to the shell, and a movable band mounted about the body for enabling ready coupling and uncoupling of the accessory spout member.

3,684,191
AERATOR CONSTRUCTION

Sidney J. Shames, 57 Holly Place, Briarcliff Manor, N.Y., and Harold Shames, 5 Agnes Circle, Ardsley, N.Y.

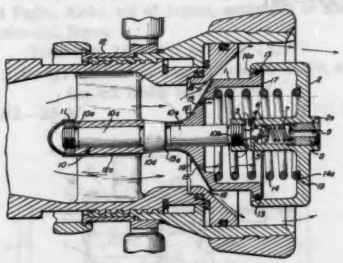
Filed Nov. 5, 1970, Ser. No. 87,074
Int. Cl. E03c 1/08
U.S. Cl. 239—428.5 4 Claims

An inexpensive faucet aerator is provided by an imperforate annular metal housing with a sub-assembly of molded parts, that may be pre-assembled without separate fasteners, and which are arranged to be slid through the open upstream end of the housing, and to cooperate with each other and with the housing to provide a mixing chamber and air inlets to the mixing chamber. Two of the molded parts are snap-connected together prior to insertion in the housing to insure proper assemblage, and the cooperation of the parts with the housing wall prevents inadvertent separation of the parts.

3,684,192
CONSTANT PRESSURE, VARIABLE FLOW NOZZLE

Clyde H. McMillan, Hobart, Ind., assignor to Fire Task Force Innovations, Inc., Hobart, Ind.

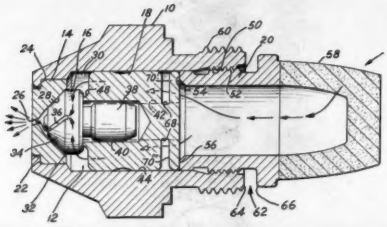
Filed June 22, 1970, Ser. No. 48,279
Int. Cl. B05b 1/32
U.S. Cl. 239—452 8 Claims



A constant pressure, variable flow nozzle is disclosed wherein a flow restricting baffle is automatically positioned by hydraulic means so as to pass only that flow which can be provided at the desired pressure, thereby maintaining effective reach and penetration characteristics of the stream from the nozzle, despite variations in supply. The nozzle contains a hydraulically controlled baffle and is particularly useful as a fire fighting device.

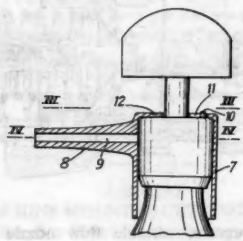
3,684,193
Patent Not Issued For This Number

3,684,194
SPRAY NOZZLE
Alex Wayne, Des Moines, Iowa, assignor to Delavan Manufacturing Company
Filed Oct. 29, 1970, Ser. No. 85,169
Int. Cl. B05b 1/34
U.S. Cl. 239—493 7 Claims



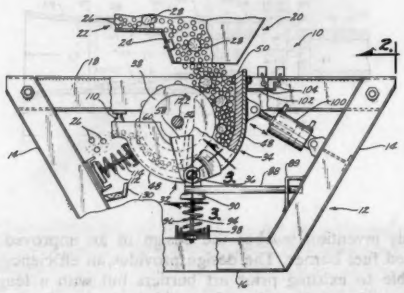
In a fluid spray nozzle having a spray orifice, a fluid distributor and a distributor retainer member, each of which is firmly positioned in an elongate passage in the nozzle body by way of a threaded nipple which is threaded into the passage and bears against the distributor retainer member, and in which the axial forces which are exerted by the nipple are limited by cantilevered arms on the distributor retainer member which flex into a radially extending groove in the member to prevent damage to the spray nozzle components, yet firmly position the components in the nozzle body.

3,684,195
VALVES
Pierre Bret, Meudon-la-Foret, and Catherine Suck, Montrouge, both of France, assignors to Societe Lablabo, Montrouge, France
Filed Dec. 29, 1970, Ser. No. 102,375
Claims priority, application France, Jan. 14, 1970, 7001179
Int. Cl. B05b 1/14
U.S. Cl. 239—561 4 Claims



A valve for use in the ejection of a fluid under pressure wherein the valve includes a valve body having a distributor which slides in a duct in the valve body and which communicates through a lateral ejection orifice with a distribution nozzle, and wherein there is provided a capping member for the valve body which capping member has a hollow lateral protuberance which acts as a support for the distribution nozzle.

3,684,196
METHOD AND MEANS FOR SELECTIVELY CRUSHING AGGREGATE
Glen W. Hankins, 1144 J. Ave., Nevada, Iowa
Filed April 15, 1970, Ser. No. 28,785
Int. Cl. B02c 1/08
U.S. Cl. 241—14 8 Claims



The method and means of crushing soft aggregate out of harder aggregate by moving the aggregate between concaves and a powered rotor wherein the concaves are yieldable relative to the rotor and one of which is reciprocally powered to facilitate moving the aggregate under pressure while being confined between the concaves and the turning rotor. The concaves are pivotally connected together and a spring means engages the pivotal connection to bias it toward the rotor. The concave at the outlet of the working chamber is limited in its travel towards the rotor thereby allowing aggregate smaller than the spacing between the concave and the rotor to pass on through. The working chamber is tapered from the concave hinge point to the outlet to provide a restrictive discharge opening.

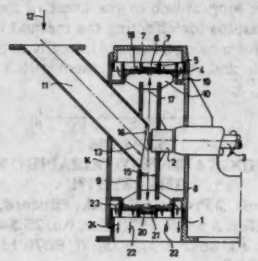
3,684,197
TALC BENEFICIATION
William H. Ashton, 10127 Bustleton Ave., Philadelphia, Pa., and Robert S. Russell, 72 Darrow St., South River, N.J.
Filed July 22, 1970, Ser. No. 57,360
Int. Cl. B02c 17/00
U.S. Cl. 241—26 3 Claims

A novel method of preparing talc powder compositions by selectively exfoliating platy talc ore to produce a unique, low bulk-density, platy, high slip and lusterous powder base composition. The delamination of the platy talc ore is accomplished by employing a variety of forces to act on the particles in such a way that after delamination the length and width dimensions of the particles remain essentially unchanged, but the thickness of the particles are substantially reduced. Thus, the resulting particles are thinner but not smaller in the length-width than conventional talc particles, and their lubricity is heightened rather than decreased. The novel talc composition of the invention is particularly useful as a body powder.

3,684,198
COMMINUTING PARTICLES
Wilhelm Pallmann, Kreuzberg 45, Zweibrucken, Germany
Filed Feb. 2, 1970, Ser. No. 7,838
Int. Cl. B02c 13/09
U.S. Cl. 241—73 7 Claims

A centrifugal impact mill is provided with a rotor having two radial plates and directs the material to be comminuted radially between the plates onto a coaxial impact track. The

particles then pass to either side of the impact track and are propelled through annular sieve tracks arranged on each side



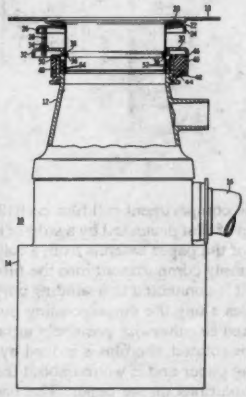
of the impact track. The impact track and the sieve tracks can be stationary or arranged to rotate as an outer rotor.

3,684,199

RAPID MOUNTING SYSTEM FOR FOOD WASTE DISPOSER

Jack E. Bebinger, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1970, Ser. No. 72,393
Int. Cl. B02c *18/42*
U.S. Cl. 241—100.5 **7 Claims**



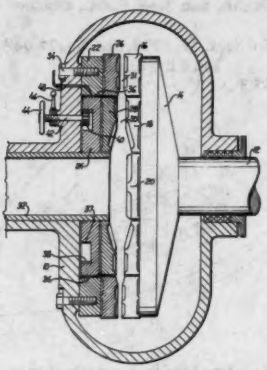
The invention provides a food waste disposer which is easily mounted without the use of additional parts or special tools to secure it in place in the sink. A conventional sink flange, gasket, clamp ring, and a novel support ring are provided, with screws threadedly attached to the support ring extending upwardly to hold the sink, sink flange, sink gasket and clamp ring together. In order to mount the major portion of the food waste disposer, the support ring is provided with a series of radial projections which extend downwardly with these projections mating with a series of corresponding projecting lug members carried on a support gasket. Locking between them is occasioned by rotating the support gasket and with it the major portion of the garbage disposer unit in either a clockwise or counterclockwise direction to lockingly engage the lug-like members behind the projections provided on the supporting ring. A series of secondary, upwardly oriented projections are also provided on the projections on the support ring, with these projections resting in well means in the projecting lugs on the support gasket.

3,684,200

GRINDING APPARATUS

Rolf Bertil Reinhall, 16 Killingvagen, Lidingo, Sweden

Filed Dec. 12, 1969, Ser. No. 884,603
Claims priority, application Sweden, Dec. 20, 1968, 17634/68
Int. Cl. B02c *7/14*
U.S. Cl. 241—256 **3 Claims**



Grinding apparatus with grinding discs in opposed relationship and forming between themselves a grinding space, one of the grinding discs being constituted of two concentrically arranged annular holder members for disc grinding elements, the inner one of which is axially adjustable relative to the outer one so as to compensate for the non-uniform wear on the grinding surfaces of the disc elements.

3,684,201

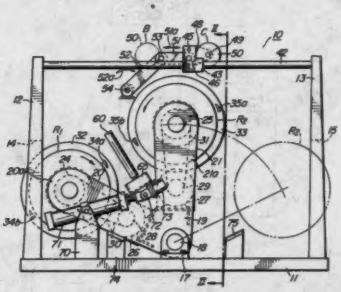
Patent Not Issued For This Number

3,684,202

CONTINUOUS TAKE-UP APPARATUS FOR A LINEAR PRODUCT

Yasuhiko Otani, Kobe; Yoshio Ikegami, Nihinomiya, and Tadami Fujio, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Filed Feb. 24, 1970, Ser. No. 13,577
Claims priority, application Japan, Feb. 26, 1969, 44/17417
Int. Cl. B65h *54/00, 67/04*
U.S. Cl. 242—25 A **8 Claims**



A wire take-up apparatus having a V-shaped frame rockable about an axis by a fluid-operated cylinder. The frame has a pair of legs on which wire take-up reels are supported for rotation about parallel axes and driven by motors. Wire guiding

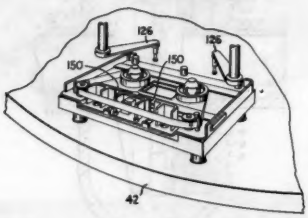
traverser and wire shifting rod are provided to shift the wire axially beyond one end of the reels when one reel is almost full of wire. Discs having thereon claws are provided adjacent said one ends of the reels for rotation therewith. The claws engage and arrest the shifted wire on another empty reel to change-over winding-up of wire from the full reel to the empty reel.

3,684,203

METHOD OF LOADING CASSETTES

Arthur W. Tolikuhn, San Jose, Calif., assignor to Memorex Corporation

Filed Sept. 21, 1970, Ser. No. 74,048
Int. Cl. G11b *23/10*
U.S. Cl. 242—67.3 **3 Claims**



A method of placing tape in a cassette during manufacture. Tape hubs are held above the flanged holes on the bottom half of a cassette in which the hubs will ride. A length of tape is attached to one of the hubs and is rolled onto the hub by rotating the hub. A portion of the same length of tape is attached to the other hub so that the tape runs between the hubs. The tape is pulled over the front of the cassette bottom, allowing the rolled up tape to unwind as much as required. The hubs and tape are then allowed to rest on the cassette bottom and the hubs are rotated to make up tape slack. Due to the construction of the bottom cassette portion, the tape does not meet any obstruction and will be threaded in the desired path.

3,684,204

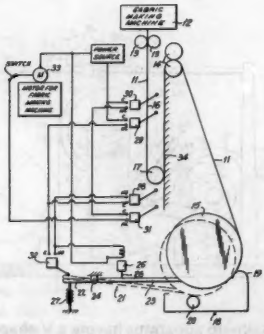
Patent Not Issued For This Number

3,684,205

SPOOL WINDING METHOD AND APPARATUS

Charles Martin Rogow, 1230 Norton Dr., Farrockaway, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,369
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.2 **21 Claims**



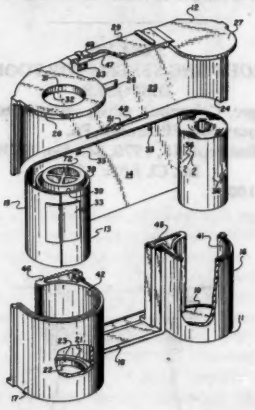
A method of enwrapping a spool with fabric issuing from a fabric source comprises providing a slackened displaceable loop in the fabric between the spool and fabric source, displacing the loop between first and second sensing positions, and controlling rotation of the spool in response to the presence of the loop at one or the other of the sensing positions. The apparatus for effecting the method includes a support assembly for moving the spool laterally of the axis of rotation thereof into and out of engagement with a driven friction roller.

3,684,206

FILM CARTRIDGE AND PHOTOGRAPHIC WEB FOR USE THEREWITH

Evan A. Edwards, 2 Prospect Hill Rd., Pittsford, N.Y.

Filed April 6, 1970, Ser. No. 25,848
Int. Cl. B02c *17/02, 13/00*; B07b *13/00*
U.S. Cl. 242—71.2 **6 Claims**



In a double compartment roll film cartridge loaded with an elongate strip of film protected by a strip of backing paper, the leading end of the paper extends from a roll of film and paper in the film supply compartment into the film takeup compartment where it is connected to a winding core. The leading end of the film lies along the corresponding portion of the paper but is not fixed or otherwise positively attached to the paper. As the core is rotated, the film is moved by frictional engagement with the paper and is wound about the core between alternate convolutions of the paper. The backing paper has a camera lock up perforation, and a metering system in a camera for receiving the cartridge arrests advancement of the film by sensing the perforation while the trailing ends of both the film and paper are in the film passageway leading into the takeup compartment, thereby improving light-tightness of the passageways leading into the two compartments.

3,684,207

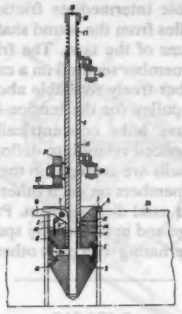
SPOOL HOLDER

Shuzo Kawamura, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto and Daiwa Boseki Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1970, Ser. No. 77,405
Claims priority, application Japan, Oct. 11, 1969, 44/96951
Int. Cl. B65h *49/00*; D01h *7/16*
U.S. Cl. 242—129.5 **6 Claims**

A spool holding device has a ring body made of a soft material which is to expand and contract diametrically and is sandwiched between a main body and a head body. A holder shaft is inserted through the tube body, the main body, and the head body, and has a spring associated therewith for con-

stantly urging the bodies toward each other. The arrangement is such that only when a fixing pin on said holder shaft and a



lever on the main body are disengaged can the head body and the main body be moved toward each other to expand the diameter of the ring body.

3,684,208

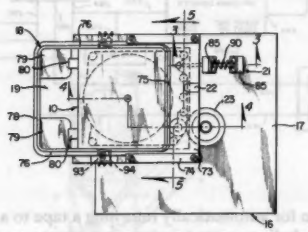
COAXIAL REEL TAPE TRANSPORT SYSTEM

Raymond B. Larsen, Riverton, Wyo., assignor to Datel Corporation, Falls Church, Va.

Continuation-in-part of Ser. No. 765,839, Oct. 8, 1968, Pat. No. 3,552,685. This application April 24, 1970, Ser. No. 31,527

Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*

U.S. Cl. 242—188 **10 Claims**



A tape cartridge contains coaxial supply and take-up reels with a spring drive which is cooperative with a tape tensioner on a tape deck to maintain substantially constant tension on the tape as it is threaded past a read/write head. A guide roller assembly disposed internally of the tape cartridge guides the tape across the head without binding or stretching and without necessitating removal of the tape from the cartridge. A top-loading housing on the tape deck facilitates insertion of the tape cartridge into alignment with the read/write head, capstan drive and tape tensioner member. Photosensors are provided within the housing to sense the beginning and end of the tape, and a control button on the tape cartridge may be advanced to a position to prevent accidental erasure of information on the tape.

3,684,209

AUTOMATIC RETURN SYSTEM FOR TAPE RECORDER

Shoji Wada, Kyoto, Japan, assignor to Mitsubishi Electric Corporation, Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,757

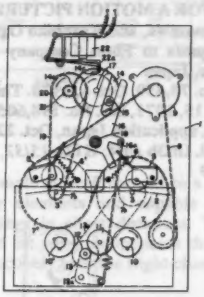
Claims priority, application Japan, Nov. 24, 1969, 45/94110

Int. Cl. B65h *59/38*; G03b *1/04*; G11b *1/52*

U.S. Cl. 242—188 **5 Claims**

A cassette tape recorder is provided with a pair of capstans and an associated pair of pinch rollers disposed on opposite sides of a magnetic head for transferring a tape both toward the right side and toward the left side thereof.

Selection between two combinations of the capstans and the pinch rollers is effected by a crank gear adapted to be rotated by applying a rotational force from a fly wheel coaxially arranged with each of the capstans, and a bifurcated lever switch arranged to hold a crank pin eccentrically provided on the crank gear therebetween. The crank gear also has toothed portions and notch portions on its periphery, the toothed portions being adapted to engage a pinion which rotates dependently on rotation of the cap-stan. Stoppers are positioned ad-



jacent the periphery of the crank gear for engaging a latching member of an electromagnetic clutch. When a detecting pulse current is supplied from a tape end detecting circuit device to the electromagnetic clutch, the latching member of the clutch is caused to release the stopper and a pendulum swing of the lever switch is initiated. By such swing of the lever switch, one pinch roller which has been engaged with the corresponding capstan is moved away therefrom, and at the same time the other pinch roller which has been moved away from the corresponding capstan is engaged therewith, and further a tape take-up means is reversed to provide an opposite take-up force.

3,684,210

AUTOMATIC FILM FEED DEVICE FOR SMALL MOVIE PROJECTORS USING A FILM CARTRIDGE

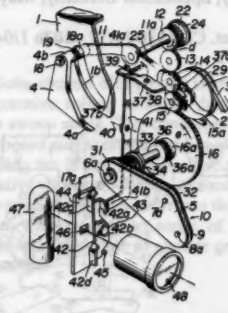
Tatsusuke Kadowaki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sept. 10, 1970, Ser. No. 70,694

Claims priority, application Japan, Sept. 22, 1969, 44/75679

Int. Cl. G03b *1/02*; B65h *17/14*; G11b *15/32*

U.S. Cl. 242—192 **9 Claims**



An automatic film feed device comprises a film threader for automatically feeding, from a film cartridge, a film to be pro-

jected, a film stripper pawl for stripping the leading end of the film from the outer convolution of the film roll, and a detector at a film gate to detect when the film has entered the film gate. This detector, upon detection of a film entering the film gate, stops feeding of the film by the film threader, resulting in movement of the film threader and the film stripper pawl to retracted positions. The film threader and stripper pawl perform their functions only when no film is present in the film gate, and responsive to actuation of a projector starting switch.

3,684,211

CARTRIDGE FOR A MOTION PICTURE PROJECTOR

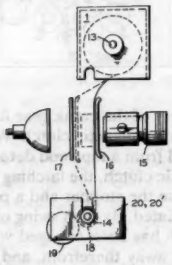
Morio Takeichi, Inazawa, and Kazuhiko Ogura, Nagoya, both of Japan, assignors to Elmo Company Limited, Nagoya, Aichi Prefecture, Japan

Division of Ser. No. 78,459, Oct. 6, 1970. This application Nov. 15, 1971, Ser. No. 198,605

Claims priority, application Japan, Oct. 22, 1969, 44/83880

Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*

U.S. Cl. 242—199 **2 Claims**



A film cartridge has a film supply reel on which a roll of film can be wound with its trailing end secured thereto, a housing in which the supply reel is rotatably positioned, and a film take-up core to which a leading end of the film roll can be secured, the take-up core being detachably connected with the housing. The take-up core is disengaged from the housing so that the takeup core together with the leading end of the film can pass through a predetermined path including a film gate in a projector or the like until the core reaches a position where it can be rotated by a driving means for film winding.

3,684,212

MAGNETIC TAPE RECORDER

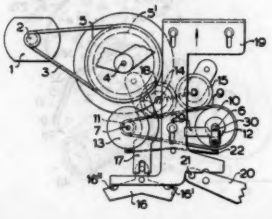
Heinz-Dieter Engert, Munich, Germany, assignor to Sud-Atlas-Werke G.m.b.H., Munich, Germany

Filed Nov. 27, 1970, Ser. No. 93,163

Claims priority, application Germany, May 26, 1970, P 20 25 524.7

Int. Cl. B11b *15/32*; G03b *1/04*

U.S. Cl. 242—201 **10 Claims**



A magnetic tape recorder, particularly of the cassette type, has a tape driving sound shaft, a pair of carrier spindles for the tape reels, a tension-friction drive and a friction clutch interconnecting the spindles for conjoint rotation responsive to tape driving during sound recording and reproduction, and selectively engageable intermediate friction drive members for driving the spindles from the sound shaft during rapid forward and reverse runs of the tape. The friction clutch comprises a first clutch member secured on a carrier spindle and a second clutch member freely rotatable about the spindle and designed as a cord pulley for the tension-friction drive. The clutch members have hubs concentrically embracing one another in radially spaced relation to define an annular space therebetween, and balls are arranged in the annular space and support the clutch members on each other free from play for relative rotation and axial displacement. Preferably, the balls are retained in a cage and in two axially spaced rows, with the balls in each row alternating with each other.

3,684,213

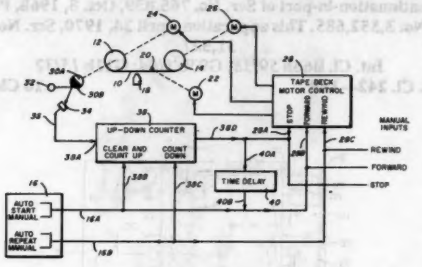
SYSTEM FOR AUTOMATICALLY RETURNING TAPE TO A PRESELECTED POSITION

John R. Golden, 5424 E. 23rd St., Tulsa, Okla.

Filed Dec. 7, 1970, Ser. No. 95,658

Int. Cl. B11b *15/32*; G03b *1/04*

U.S. Cl. 242—201 **2 Claims**



A system for automatically returning a tape to a preselected position including means to generate a count responsive to the revolution of the tape supply reel, means of adding the count generated to obtain a count sum, means of reversing the movement of the tape from the forward to the rearward direction, means to generate a count responsive to the revolutions of the supply reels as the tape is moved in the rearward direction, means of subtracting the count generated as the tape is moved in the rearward direction from the count sum, and means of stopping the rearward direction of the tape when the count sum is zero.

3,684,214

FLYING BODY HAVING EXTENSIBLE FINS

Helmut Kloss, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Feb. 3, 1970, Ser. No. 8,241

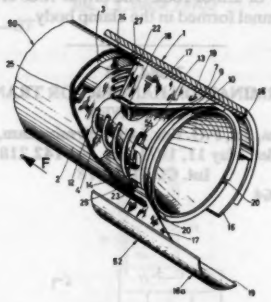
Claims priority, application Germany, Feb. 7, 1969, P 19 06 028.7

Int. Cl. F42b *13/32*

U.S. Cl. 244—3.27 **9 Claims**

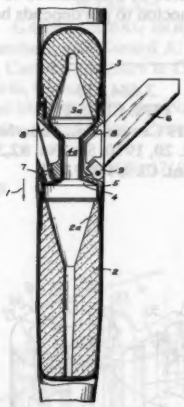
A flying body, in particular a projectile of a type which is adapted to be ejected from a tube includes a tubular outer casing and a plurality of tail fins conforming to the configuration of the casing and arranged at spaced circumferential locations

therearound which are held by extension means under tension when the fins are retracted in position within the tube. When



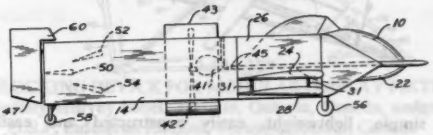
the projectile is directed out of the tube the extension means move in a direction to cause outward movement of the tail fins into an operative position.

3,684,215
MISSILE
Gunnar Jacobson, and Olof Bertil Olsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed May 28, 1970, Ser. No. 41,373
Claims priority, application Sweden, June 6, 1969, 8063/69
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.27 **2 Claims**



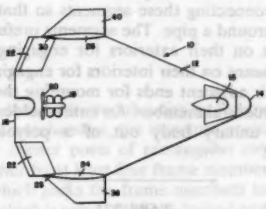
The invention concerns a missile, in particular a guided missile, having stabilizing wings and a solid fuel propulsion motor. The fuel of the propulsion motor is divided into two separate fuel charges located axially spaced in the missile. The portion of the interior of the missile between the two fuel charges consists of an empty space, into which the fuel charges deliver their combustion gases and which is surrounded by an annular member forming the external shell of the missile between the two fuel charges and comprising the jet nozzles for the propulsion motor. The two fuel charges have such relative sizes and locations in the missile that their common gravity center coincides substantially with the total gravity center of the missile. The stabilizing wings are attached to the annular member comprising the jet nozzles and are located circumferentially between said jet nozzles.

3,684,216
VARIABLE GEOMETRY AIRCRAFT
Everett L. Morgan, 675 La Casa Via, Walnut Creek, Calif.
Filed Aug. 6, 1970, Ser. No. 61,722
Int. Cl. B64c *3/38*
U.S. Cl. 244—13 **3 Claims**



A structurally simple aircraft formed to a considerable extent of rectilinear elements and capable of low velocity takeoffs and landings in short distances. The aircraft has unique control and lift wing components that are adjustably positionable to selectively vary the flight characteristics of the aircraft.

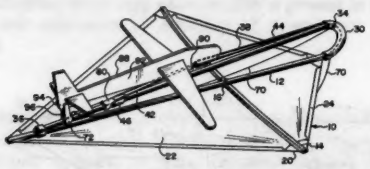
3,684,217
AIRCRAFT
John P. Kukon, W. Trenton, N.J., and William F. Putman, Staten Island, N.Y., assignors to Aereon Corporation, Princeton, N.J.
Filed Sept. 30, 1970, Ser. No. 76,696
Int. Cl. B64c *1/00, 3/02*
U.S. Cl. 244—36 **5 Claims**



Stability of a delta-shaped lifting body is improved by compensating for excessive rolling moment due to sideslip that results from high sweep angle. The compensation is achieved by providing outboard surfaces disposed at negative dihedral angles or by shaping the lifting body itself so that there exists an effective negative dihedral. Where outboard surfaces are used, they can be swept forward to decrease the rate of change of dihedral effect with respect to angle of attack, and to produce the additional advantage of greater ground clearance at high angles of attack.

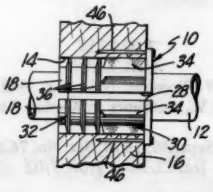
3,684,218
Patent Not Issued For This Number

3,684,219
GLIDER LAUNCHER FOR KITES
Robert W. King, 5620 Theobald, Morton Grove, Ill.
Filed Dec. 18, 1970, Ser. No. 99,615
Int. Cl. B64c 31/06
U.S. Cl. 244—155 9 Claims



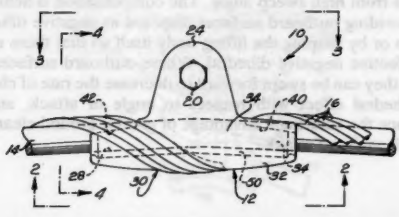
A simple, lightweight, easily constructed and easily operated, spring-loaded glider launching attachment for a kite is disclosed which is formed primarily from flexible plastic tubing, paper clips or the like and rubber bands. Other embodiments are disclosed.

3,684,220
PIPE HOLDER
Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif.
Filed Nov. 19, 1970, Ser. No. 91,070
Int. Cl. F16l 5/00
U.S. Cl. 248—56 1 Claim



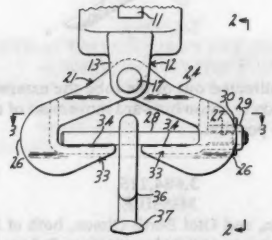
A pipe holder for use in holding a pipe relative to a structural member can be formed so as to include a plurality of segments, each of which corresponds to part of a cylinder and hinge means connecting these segments so that they can be opened to fit around a pipe. The segments preferably include holding means on their exteriors for engaging a structural member, rib means on their interiors for engaging a pipe and flanges on their adjacent ends for mounting the holder with respect to a structural member. An entire holder is preferably formed as a unitary body out of a polyolefin such as polypropylene.

3,684,221
HELICAL SUSPENSION CLAMP ASSEMBLY
Albert C. Bonds, Rocky River, Ohio, assignor to Helical Line Products Co., Rocky River, Ohio
Filed Oct. 23, 1970, Ser. No. 83,343
Int. Cl. F16l 3/10
U.S. Cl. 248—63 9 Claims



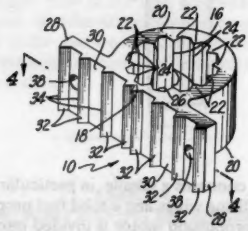
An improved suspension clamp assembly for supporting a conductor or other line includes a body having a passage through which the line passes. The body is clamped in tight frictional engagement with the line by helical armor rods which are wrapped around the body and the line. The necessary clamping action between the body and the line is achieved by a partial lay of armor rods. The armor rods are positioned in a helical channel formed in the clamp body.

3,684,222
LOAD DETERMINATION HANGER FOR TRANSMISSION LINE TOWER
Malcolm Bethea, Jr., P.O. Box 1407, Birmingham, Ala.
Filed May 11, 1971, Ser. No. 142,218
Int. Cl. F16l 3/18
U.S. Cl. 248—64 7 Claims



Load determination hanger for transmission line tower having spaced apart depending supports with a recess in at least one depending support. Elongated pin extends between supports with one end thereof within recess. Horizontal supports carried by depending supports extend inwardly in spaced relation to each other beneath pin to limit downward movement thereof with pin being free to move over horizontal supports upon application of force of a magnitude to bend pin. Load carrying member connected to pin depends between horizontal supports.

3,684,223
PIPE CLAMP
Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif.
Filed Oct. 20, 1970, Ser. No. 82,352
Int. Cl. A44b 21/00
U.S. Cl. 248—74 1 Claim



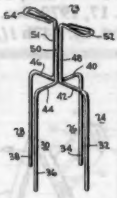
A pipe clamp for holding a pipe so as to isolate sound, prevent electrolysis and minimize heat transmission while avoiding pipe rupture and yet premitting pipe expansion and contraction can be formed of a single body of a resilient polymer material. This body includes a slotted cylindrical center section having ridges extending towards its interior and attaching flanges with ribbed lower surfaces, these flanges extending from the center section on opposite sides of the slot in the center section.

3,684,224

HOLDER

Stanley J. Kwako, 1001 Hannifin St., Bismarck, N. Dak.

Filed Oct. 16, 1970, Ser. No. 81,297
Int. Cl. B05f *13/02*
U.S. Cl. 248—87 **5 Claims**



A hose holding device is disclosed comprising first channel forming means for receiving a first section of hose, second channel forming means for receiving a second section of hose, means disposing said first channel forming means and said second channel forming means to position said first and said second channel forming means so that the second section of hose when received in the channel formed by said second channel forming means overlays the first section of hose when received in the channel formed by said first channel forming means and means adapted to contact said second section of hose and to force said second section of hose to lie substantially flat with the surface thereunder and to further force said first section of hose to lie substantially flat with the surface thereunder.

3,684,225

GARBAGE BAG HOLDER

Richard M. Crawford, and Gerard A. Parsons, both of London, Ontario, Canada, assignors to Cinran Plastics Limited, London, Ontario, Canada

Filed May 17, 1971, Ser. No. 144,051
Claims priority, application Canada, June 23, 1970, 086,322
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **13 Claims**

A garbage bag holder consisting of two pieces which when assembled and mounted are adapted to suspend a garbage bag in operative position, the holder being formed of a metal mounting plate adapted for mounting against a vertical supporting system and a bag supporting frame adapted to be secured by said brackets so as to provide a horizontal rectilinear frame with sharply pronounced corners within which a garbage bag may be suspended.

3,684,226

Patent Not Issued For This Number

3,684,227

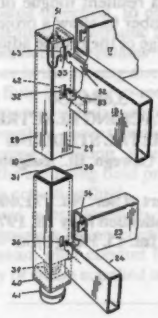
Patent Not Issued For This Number

3,684,228

LOCKING DEVICE FOR MODULAR DISPLAY FIXTURE

Sydney Murray Sobel, Toronto, Ontario, Canada, assignor to O.S.F. Industries Limited, Toronto, Ontario, Canada

Filed Aug. 28, 1970, Ser. No. 67,845
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.1 **8 Claims**

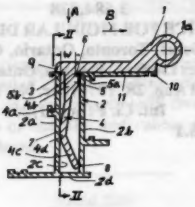


A locking device for modular display fixture for the storage or display of merchandise, the structure consisting of at least four tubular corner posts of rectangular cross-section connected together by at least four frame members by a connecting means which locks the frame members to the posts by a mechanism which is actuated to the locked and unlocked position by a screw-driver, allen key, or the like. To that end, each post is formed with at least one pair of first slots in each of two contiguous faces, said two pair of first slots being co-planar. A reciprocatable latch member is mounted in each post and formed with second slots corresponding to and registering with each of the first slots; the portion of the latch member contiguous to each second slot forming a latch plate. A screw member is slidably mounted within the post and connected to said latch member for moving the latch member to a position which partially obstructs its respective first slots; and spring means urging said latch member in the opposite direction. Each frame member has on each of its ends a pair of tongues which are spaced to enter one of the pairs of said first slots and the contiguous second slots; each tongue being formed with an upper latch plate receiving notch, said notch being positioned to register with the adjacent latch plate when the tongue is entered in said slots. By turning the screw, the latch member can be caused to move downwardly and engage in the notch and firmly lock the structure together. Opposite rotation of the screw releases the lock.

3,684,229
MOUNTING ARRANGEMENT FOR METAL FITTINGS ON PROFILE FRAME MEMBERS, WALLS, PLATES AND THE LIKE

Erwin Peter, and Peter Oswald, both of Oberosterreich, Austria, assignors to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Oberosterreich, Austria

Filed Oct. 19, 1970, Ser. No. 81,703
Claims priority, application Austria, Oct. 21, 1969, 9897; April 2, 1970, 3004
Int. Cl. A47l 5/08; E06b 7/28
U.S. Cl. 248—223 20 Claims

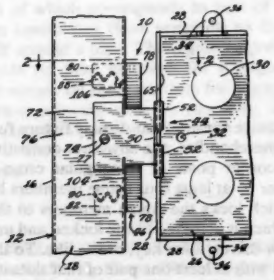


A metal fitting, e.g. a butt of a hinge, is mounted on a profile member by inserting a resilient tongue of the fitting through an opening in the member to allow a projection of the tongue to engage behind a ledge of the profile adjacent this opening.

3,684,230
DEVICE FOR ATTACHING ELECTRICAL BOXES TO METAL STUDDING

Wesley W. Swanquist, Oswego, Ill., assignor to All-Steel Equipment Inc.

Continuation-in-part of Ser. No. 771,408, Oct. 29, 1968, abandoned. This application May 18, 1970, Ser. No. 38,319
Int. Cl. H02g 3/08
U.S. Cl. 248—229 14 Claims



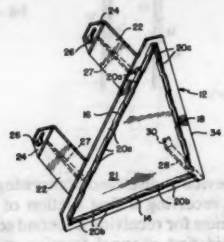
The disclosure relates to a device for attaching switch boxes and the like to metal studding, for use on studding of the channel and stressed wire types, which is in the form of a mounting device including a clip portion in which the box is secured and a stud engaging portion that includes a planar flange defining an abutment portion adjacent its projecting end that is adapted to engage against one of two opposite surfaces of the stud, with the flange carrying a pair of spring arms that project outwardly therefrom and diverge outwardly thereof that each include a finger engaging portion at the projecting end thereof and an abutment forming toothed projection at right angles thereto that are spring biased against the other surface of the stud to clamp the stud portion bearing such surfaces between the flange abutment portion and the abutment forming projections. An alternate form of the device is disclosed that is arranged specifically for use on nailable steel studding.

3,684,231
Patent Not Issued For This Number

3,684,232
FIXTURE FOR HANGING DRAPES

Sheldon H. Waldron, P.O. Box 222, Georgetown, Del.

Filed Sept. 17, 1970, Ser. No. 72,909
Int. Cl. A47h 1/10
U.S. Cl. 248—300 6 Claims

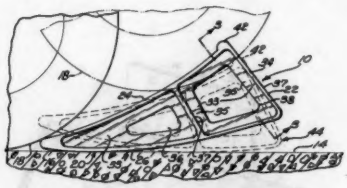


A device for simplifying the installation of drapes, particularly pleated drapes. A pair of the devices or fixtures are adapted to be mounted on the upper portions of a window, door frame or wall and the fabric may be inserted through and folded around each fixture in a manner to form a corner of the drapery installation. In addition, provision is made for the optional mounting of a decorative member on the fixture.

3,684,233
LEVELING DEVICE

Franklin J. Vukich, New Castle, Pa., assignor to Lockley Manufacturing Co., Inc., New Castle, Pa.

Filed Nov. 13, 1970, Ser. No. 89,255
Int. Cl. F16m 13/00
U.S. Cl. 248—352 4 Claims



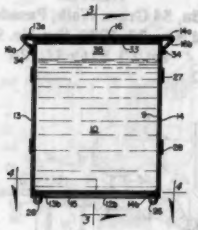
A leveling device supports a portion of a vehicle in a level position when the vehicle is on irregular terrain. The leveling device includes a wheel-receiving surface upon which one of the wheels of the vehicle may be moved. The leveling device also includes a terrain-engaging surface which is curvilinear in configuration, converges toward the wheel-receiving surface and extends at an acute angle with respect to the terrain-engaging surface. A wheel of the vehicle is moved onto the wheel-receiving surface at the narrow end of the leveling device. As the wheel moves along the wheel-receiving surface and the terrain-engaging surface engages the irregular terrain, the device rocks on the terrain. Consequently, the wheel of the vehicle is raised or lowered and thereby the vehicle is leveled.

3,684,234

EXPANDABLE ICE FORM

Virgil L. Clinebell, 1713 Cameo Ave., Loveland, Colo.

Filed March 11, 1970, Ser. No. 18,504
Int. Cl. B28b 7/06; F25c 1/02, 1/22
U.S. Cl. 249—112 9 Claims



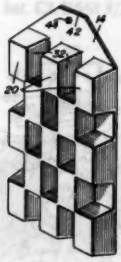
An expandable form for supporting a pliable container enclosing a freezable fluid material during the freezing thereof, and preferably a closed plastic bag containing water. The form is constructed and arranged to allow a sufficient outward flexing or expansion of the side wall sections to permit the resulting body of ice to be readily released from the form. An air space is provided in the top of the bag and between the top of the bag and the side wall sections which serves as an effective insulation along the top surface of the contained water as it changes to ice. A removable cover extends across the top of the form which holds the top of the bag closed and in place and permits stacking of one form on top of another.

3,684,235

ICE MOLDING APPARATUS

Melvin E. Schupbach, P.O. Box 151, Fenton, Mich.

Filed Jan. 12, 1970, Ser. No. 2,331
Int. Cl. B28b 7/06
U.S. Cl. 249—127 3 Claims



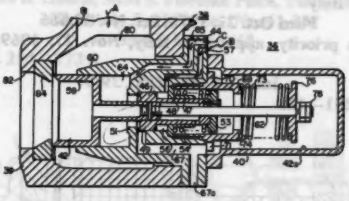
A plurality of selectively and reversably superimposable planar and pocketed panels for nesting in a container and dividing the interior of the container into the same or different shaped chambers in which to form ice cubes, when the container, with water and the superposed panels are disposed therein, is subjected to below freezing temperatures. The various superimposable panels are of a size for nesting within a milk carton or the like after the upper end of the carton has been removed or unfolded to the fully open position.

3,684,236

COMBINED HYDRAULIC DUMP AND CONTROL VALVE STRUCTURE

Ivor J. Lewis, Secane, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,359
Int. Cl. F16k 31/143
U.S. Cl. 251—28 3 Claims



A valve structure for dumping and/or controlling hydraulic fluid for actuating a servo-motor system comprising a first movable valve member and a second movable valve member both slidably disposed within the housing structure of the valve. First and second pressurized fluids, responsive to external signals, cooperatively regulate the movement of both valve members in the closing direction, to establish and to control the pressure of the actuating hydraulic fluid. The second pressurized fluid independently regulates the movement of the second valve member in the closing direction to block and unblock the actuating fluid in the servo-motor system. On loss of pressure from the external signals, a spring member associated with each valve member moves each corresponding valve member in the opening direction, to either a partially open position to control the actuating fluid pressure, or a fully open position to dump the actuating fluid.

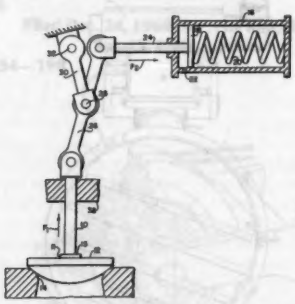
The valve structure is employed in a servo-motor system which is used to regulate a steam control valve. This control valve is used in a steam inlet conduit for a steam turbine to regulate the quantity of steam supplied to the turbine.

3,684,237

VARIABLE FORCE ANGLE LINKAGE

Gilbert F. Hyde, Brookhaven, and Ralph W. LeGates, Glen Mills, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 34,464
Int. Cl. F16k 31/16, 41/18
U.S. Cl. 251—58 4 Claims



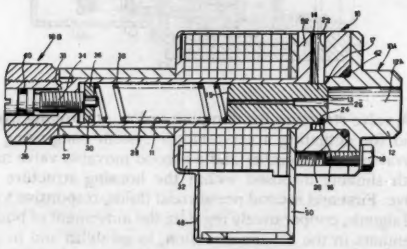
A variable force angle linkage, particularly adapted for use in actuating steam valves and the like, consisting of four linkages and characterized in that the force on a valve or other device is greatest when the valve is adjacent its seat, the force gradually diminishing as the valve moves away from its seat,

whereby the actuator force does not overstress the backseat contact surface of the valve when in its fully open position. At the same time, the dimension of the actuator along the axis of the valve is greatly reduced over prior art actuators.

3,684,238
FLUID PRESSURE MODULATING VALVES

Gian Carlo Michellone, Strada delle Camporelle, Cambiano, Turin, and Mario Palazzetti, Via Fratel Teodoreto 7, Turin, both of Italy

Filed Oct. 21, 1970, Ser. No. 82,666
Claims priority, application Italy, Nov. 27, 1969, 54189 A/69
Int. Cl. F16k *31/06, 39/04*
U.S. Cl. 251—129 1 Claim

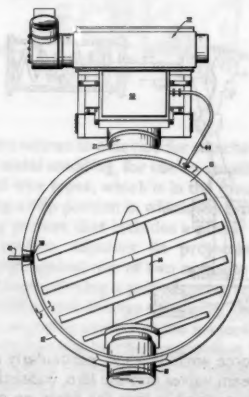


An electromagnetically controlled fluid pressure modulating valve comprises a cylindrical body within which a valve piston is freely movable. The valve piston controls the opening and closing of inlet and outlet passageways by means of a conical valve seat ground on one end of the piston and a corresponding seat on the end of the cylinder. The piston has a passageway permitting the flow of fluid into the blind end of the cylinder to substantially equalize the fluid pressure on both sides of the piston. The valve piston forms the movable core of an electromagnet the current flowing through which determines the position of the piston and therefore the amount of fluid flow through valve.

3,684,239
BUTTERFLY TYPE VALVE WITH STRESS SEAL

Harry Schwartzbart, and Robert Albert Douty, both of Pittsburgh, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 30, 1970, Ser. No. 93,651
Int. Cl. F16k *5/16*
U.S. Cl. 251—173 6 Claims

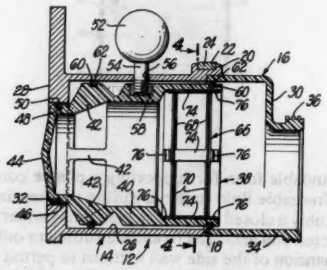


A butterfly valve assembly wherein metal body has an annular seat member, peripherally engaged by a rotatable disc in valve closed position, the seat member is an annular metal band having thickened ends welded to the body providing a continuous pressure tight annular space between the band and the body, and fluid pressure preferably higher than line pressure is introduced into that space when the valve is closed for stressing the seat band to sealingly engage the disc.

3,684,240
VALVES

Theodore A. Stehlin, 54 Grace Walk, Pasadena, Calif.

Filed Nov. 27, 1970, Ser. No. 93,353
Int. Cl. F16k *31/528*
U.S. Cl. 251—252 2 Claims

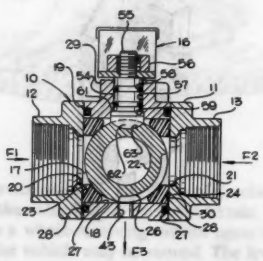


A valve particularly adapted to be used in the bottom of a tank and particularly desirable for use in connection with food products because of the ease with which it may be disassembled and cleaned can be constructed utilizing a two part cylindrical housing having an inlet opening in one end of the housing. A movable poppet is located within the housing in such a manner that a handle attached to the poppet body and extending out through a diagonal slot in the housing may be moved in the slot so as to move a poppet head serving as a valve closure with respect to this inlet opening. Seals are carried by the poppet body so as to engage the interior of the housing in order to prevent leakage out around the handle.

3,684,241
BALL VALVE

Leonard Hartmann, Maplewood, and Joseph S. Sciuto, Jr., Crestwood, both of Mo., assignors to Stile-Craft Manufacturers, Inc., St. Louis, Mo.

Filed Aug. 31, 1970, Ser. No. 68,219
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 7 Claims



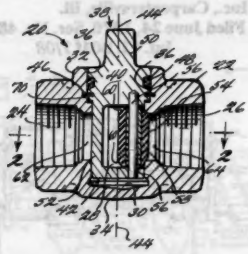
The valve includes a body having aligned inlet and outlet ports intercommunicating by means of a central conduit passing through a rotatable ball mounted in the housing. The conduit permits fluid flow through the valve when the valve is in an open position and is alignable with the inlet and outlet ports. The rotatable ball is seated on sealing elements which are preloaded to provide sealing in both the open and closed valve positions.

3,684,242

SOFT SEATED ROTARY VALVE

William L. Hauffe, Warrensburg, and Robert R. Finney, Decatur, both of Ill., assignors to Mueller Co., Decatur, Ill.

Filed April 28, 1970, Ser. No. 32,708
Int. Cl. F16k 5/00, 11/06
U.S. Cl. 251—317 9 Claims



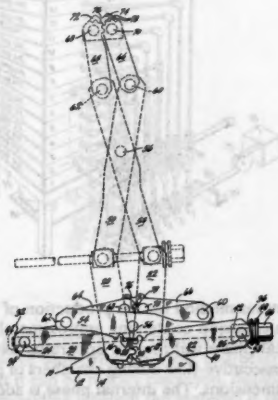
A rotary valve assembly is provided having a valve housing member and a rotary valve arranged therein. The valve housing is provided with an inlet and an outlet opening into a central chamber. Spaced above the central chamber is an opening for the insertion into the central chamber of a unitary structure. A cylindrical roller made of resilient material is carried by the unitary valve structure for movement within the central chamber between open and closed positions. The cylindrical roller is designed to provide a snap-in action when it is disposed either in open or closed positions. The roller will have a rotary movement about its own axis, and it will also have a bodily movement in a circular path about a central axis in the chamber. The roller has inwardly tapered or frustoconical ends whereby it will be resiliently and tightly disposed within an oblong port in the central chamber to define the closed position. A second cylindrical roller may also be provided on the unitary valve structure, diametrically opposed from and of identical or substantially identical construction to the first cylindrical roller whereby the two rollers will be designed simultaneously to be closed to seal both the inlet and the outlet into the central chamber. Grooves or blind seats are provided in the central chamber for the reception of the rollers to indicate the open position.

3,684,243

SCISSORS JACK

Axel E. Andersen-Vie, Jackson, Mich., assignor to Ryersen S. Haynes, Inc., Jackson, Mich.

Filed Aug. 3, 1970, Ser. No. 60,565
Int. Cl. B66f 3/22
U.S. Cl. 254—122 2 Claims



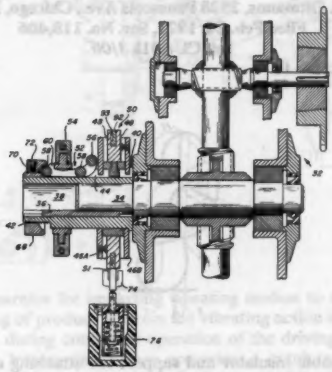
A scissors jack of the "double" linked type utilizing six pairs of linkages supported upon a base plate and wherein both the lowermost and uppermost linkage sets are interconnected by correlation means in the form of gear teeth to produce a synchronized relationship between the linkages during extension and retraction of the jack, and particularly insure complete jack linkage retraction.

3,684,244

DUO-BLOCK SAFETY DEVICE

Theodore B. Houck, 3636 S. Florence Place, Tulsa, Okla.

Filed Aug. 5, 1970, Ser. No. 61,142
Int. Cl. B66d 1/48
U.S. Cl. 254—173 R 2 Claims



A safety stop for a traveling block of a drilling rig utilizes a cam carried by and rotating in unison with a shaft which in turn is driven in geared relationship by the rotating shaft of the power winding drum of the traveling block. A cam follower actuated valve initiates means to stop the travel of the block at the upper and lower limits.

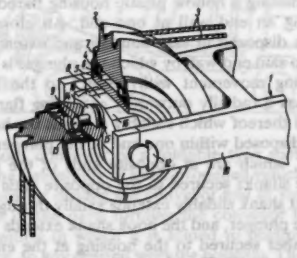
By disengaging a floating clutch, an operator can rotate the cam relative to its carrying shaft to quickly and easily adjust the upper and lower stop limits of the traveling block.

3,684,245

DRAGLINE BOOM

Vladimir Petrovich Marichev, ulitsa Menzhinskogo, 3, kv. 7, Kiev; Viktor Iosifovich Slepian, ulitsa Katerinicha, 22, kv. 27, Kramatorsk, Donetskoi oblasti; Nikolai Arsentievich Stetajuk, ulitsa Pionerskaya, 7, kv. 51, Kramatorsk, Donetskoi oblasti, and Samuil Borisovich Ginzburg, ulitsa B. Khmelnitskogo, 9, kv. 40, Kramatorsk, Donetskoi oblasti, all of U.S.S.R.

Filed Dec. 24, 1969, Ser. No. 888,006
Int. Cl. B66d 1/36
U.S. Cl. 254—190 3 Claims



A dragline boom with a pulley around which a hoisting rope passes carried on its free end, mounted with the aid of

bearings on a bush installed with the possibility of rotation by means of a pin on a cross-piece secured on the free end of the boom. The pin is arranged perpendicular to the cross-piece, and the longitudinal axis of this pin is offset upwardly relative to the longitudinal axis of the bush.

3,684,246

Patent Not Issued For This Number

3,684,247

INSULATOR AND SUPPORT FOR ELECTRICALLY CHARGED FENCE WIRES

George F. Oltmanns, 2528 Pensacola Ave., Chicago, Ill.

Filed Feb. 24, 1971, Ser. No. 118,406
Int. Cl. A01k 3/00
U.S. Cl. 256—10 7 Claims

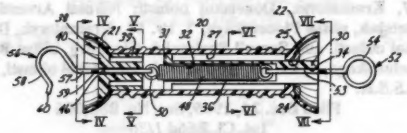
A reusable insulator and support for attaching electrically charged fence wire to fence posts or rods comprises a flexible, strip-form member composed of a dielectric material. The support member has a portion deflectable into a configuration for encircling the fence wire and is attachable to the fence post in a manner to support the fence wire on the post.

3,684,248

FENCE GATE HANDLE

Robert E. Maes, Jr., Holland, Mich., assignor to Maes Incorporated, Holland, Mich.

Filed July 9, 1971, Ser. No. 161,081
Int. Cl. A01k 3/00
U.S. Cl. 256—10 8 Claims



A gate handle for providing an opening in an electrified fence, including a hollow plastic housing flared at both ends and having an end wall at one end. An elongated tubular plunger is disposed in said housing and extends through an opening in said end wall by which the plunger is supported for axial sliding movement with respect to the housing. Said plunger has a radially outwardly extending flange on the interior end thereof which slidably engages the housing. A coil spring is disposed within one end of the plunger. A hook and an eyelet, which are at opposite ends of the housing, have elongated shanks secured to the opposite ends of the spring. The eyelet shank slidably extends axially through the exposed end of the plunger, and the hook shank extends through a closure member secured to the housing at the end thereof opposite the end wall. The plunger has an axially and radially extending slot for assisting in the assembly of the spring, plunger, hook and eyelet.

3,684,249

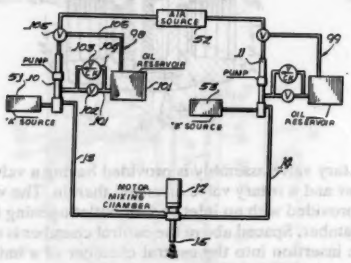
Patent Not Issued For This Number

3,684,250

MULTI-COMPONENT MIXING APPARATUS

John O. Roeser, Arlington Heights, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed June 24, 1970, Ser. No. 48,981
Int. Cl. B01f 7/08
U.S. Cl. 259—8 11 Claims



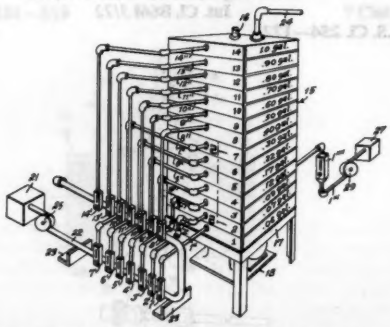
An apparatus for mixing a plurality of separate flowable materials in desired proportions. The apparatus includes a positive displacement piston pump for each material and a mixer. The piston displacement of each pump is regulated, either by an oil reservoir system or by adjustable crank arms, so that each pump delivers material in the proper proportion. The outlet of each pump is connected to the mixer, wherein the materials are thoroughly mixed by a rotating agitator vane and delivered as a thoroughly mixed composite of all of the individual materials.

3,684,251

APPARATUS FOR CONTINUOUS EMULSIFICATION

George W. Bowling, Circleville, Ohio, assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 8, 1970, Ser. No. 70,297
Int. Cl. B01f 7/16, 15/02
U.S. Cl. 259—8 2 Claims

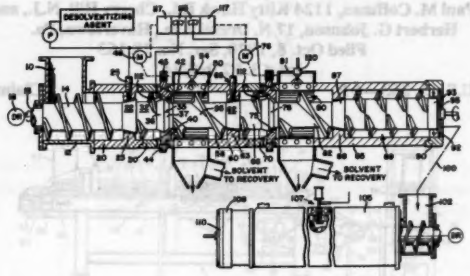


A continuous method for the production of a high-internal-phase-ratio emulsion containing approximately 90 to 99 percent internal phase utilizing an apparatus having a series of stacked consecutive-flow mixing chambers of progressively increasing dimensions. The internal phase is added successively to the separate chambers whereas the external phase is added to the first chamber.

3,684,252
DESOLVENTIZING APPARATUS

William N. Nissle; Robert K. Slaby, and Dean K. Bredeson, all of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Sept. 4, 1970, Ser. No. 69,857
Int. Cl. B01f 7/08
U.S. Cl. 259—9 14 Claims

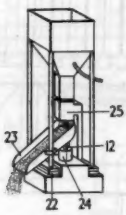


Polymers containing volatile solvents or the like are fed into a cylindrical cage and carried through the cage by screw members past injectors which add a desolventizing agent to the polymer. This agent is mixed into the polymer and the polymer is then forced through a circular ring, which is axially adjustable, forming an annular restriction which exits into a vented section of the cage where pressure on the polymer is substantially reduced and the volatile solvent escapes through slit-like vent openings to be collected and returned to solvent recovery apparatus. This arrangement is repeated through a second set of injectors, mixing screws, and vent section. The polymer may have compounding agents, such as an oil, injected and mixed into it, either in the same apparatus, or in a second machine, and either before or after the desolventizing steps.

3,684,253
TREATMENT OF PARTICULATE MATERIAL

Christopher Graham Bevan, London, England, assignor to C. G. Bevan Associates Limited, London, England

Filed Jan. 13, 1971, Ser. No. 106,164
Int. Cl. B01f 11/00, 13/02
U.S. Cl. 259—29 19 Claims

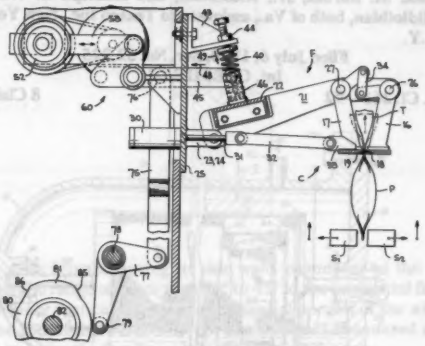


Methods of and apparatus for treating particulate material for the purpose of improving the flow characteristics of the material so that it can be readily conveyed, dispensed, shaped or formed by moulding wherein the material is fluidized with gas under pressure to reduce its bulk density whilst being simultaneously vibrated.

3,684,254
VIBRATING CLAMP PRODUCT SETTLER WITH INTERRUPTER

Nelson R. Henry, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga.

Filed June 18, 1970, Ser. No. 47,309
Int. Cl. B01f 11/00
U.S. Cl. 259—72 6 Claims

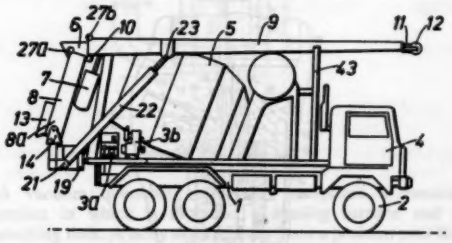


An apparatus for imparting vibrating motion to a package for settling of product wherein the vibrating action may be interrupted during continued operation of the driving means is disclosed. Interrupter linkage comprises a crank, action link and slide and is operative through alignment of the axes of the fixed pivot for the crank and the positionable pivot between the link and slide. Springs are utilized to give positive driving action to the package engaging clamp in one direction and to maintain the crank, link and slide and operating lever in the proper positions.

3,684,255
ARTICULATED PIVOTABLE CONTINUOUS CONVEYOR MOUNTED ON A WHEELED FRAME, PREFERABLY CARRYING ALSO A ROTATING MIXER

Lionello Rossi, Via Tiburtina, Km. 16,500, Rome, Italy

Filed Dec. 28, 1970, Ser. No. 101,991
Claims priority, application Italy, Jan. 15, 1970, 47791 A/70
Int. Cl. B28c 7/16
U.S. Cl. 259—169 10 Claims



A continuous conveyor of a foldable type mounted on a wheeled frame, preferably of a self-propelled vehicle, together with the means for driving the conveyor and to vary the relative positions of the parts forming the conveyor from its inoperative position in which it is folded to occupy the most reduced space, to any desired working position. The conveyor is preferably associated with a concrete mixer truck and is constituted of at least two rectangular frame sections pivotally interconnected and supported by a bracket to freely project-

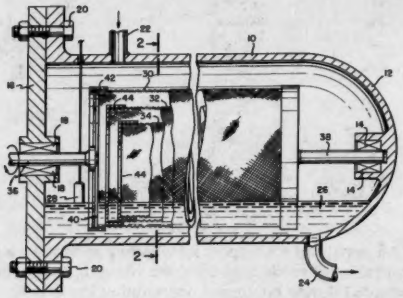
ing outwards. The conveyor rotates around a vertical axis to be moved from its retracted arrangement in which it is folded along a lateral side of the vehicle, to an arrangement in which its charging end is positioned in the longitudinal vertical center plane of the vehicle and just below the discharge opening of the mixer of the truck.

3,684,256

LIQUID-GAS CONTACTOR

Vernon M. Barnes, Jr., Richmond, and Rudolph C. White, Midlothian, both of Va., assignors to Texaco Inc., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,225
Int. Cl. B01f *3/04*
U.S. Cl. 261—92 **8 Claims**



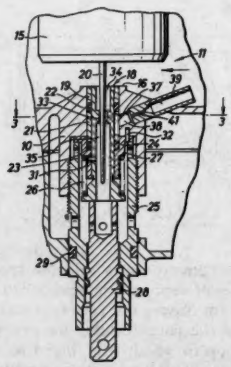
A liquid-gas contactor in which one or more cylindrical screens constantly revolve about their axes, with their lower periphery dipping into the liquid so that films of the liquid are constantly carried thru an atmosphere of reactant gas which is maintained above the liquid. The cylindrical screens may be of respectively decreased diameter, arranged one internally within the other, and the inner screens may rest on the inner surface of the outer larger diameter screen so that it rotates therewith by rolling contact.

3,684,257

CARBURETTERS

Geoffrey Lloyd Lawrence, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, England

Filed July 17, 1970, Ser. No. 55,836
Claims priority, application Great Britain, July 22, 1969, 36,844/69; March 24, 1970, 14,302/70
Int. Cl. F02m *9/06*
U.S. Cl. 261—39 B **8 Claims**



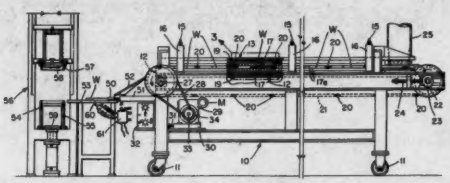
A carburetter of the constant depression type, in which fuel enters the throat of the induction passage through a jet orifice controlled by a profiled needle moving with the air valve slide, is arranged to have air supplied to the jet orifice to mix with the fuel, so that an air/fuel emulsion or mixture, instead of fuel alone, is delivered to the induction passage. Provision is also made for controlling the temperature of the air supplied to the induction passage of the carburetter.

3,684,258

APPARATUS AND METHOD FOR BILLET HEATING AND SOLID STRETCH FORMING

Paul M. Coffman, 1124 Kitty Hawk Rd., Cherry Hill, N.J., and Herbert G. Johnson, 17 N. Drexel Ave., Havertown, Pa.

Filed Oct. 8, 1970, Ser. No. 79,163
Int. Cl. F27b *9/14*
U.S. Cl. 263—6 R **7 Claims**



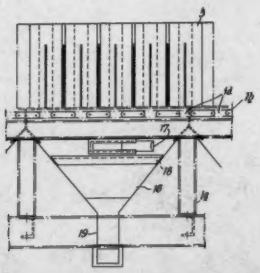
This application discloses heating apparatus and method of heating employing longitudinally extending heating plates which maintain contact proximity with both surfaces of a line of billets at all times, i.e., actual surface contact with both sides of the billets or full surface contact with the lower side and close proximity at the upper side for engaging projecting portions if warped or burred, the plates being provided with a coating of a material having a low coefficient of friction, such as a fluorocarbon polymer, and means for advancing the line of billets along between the heating plates while the space between plates is maintained constant.

3,684,259

HEAT TREATMENT OF BODIES OF COMBUSTIBLE MATERIAL

Geoffry Hugh Saul, Harrogate, England, assignor to Cawood Wharton & Company Limited, Harrogate, England

Filed Sept. 18, 1970, Ser. No. 73,363
Claims priority, application Great Britain, Feb. 10, 1970, 15,070/69
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 R **8 Claims**



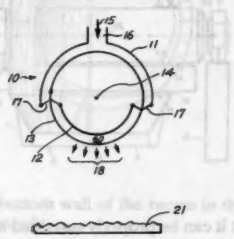
A method of and apparatus for heat treating bodies of combustible material in which a bed of the bodies is continuously moved by means of a conveyor in such manner that the individual bodies do not move relatively to one another and to the conveyor, heated granular material being passed through the conveyed bed so as to transfer heat to the individual bodies and air flow through the bed of bodies being controlled during said heat treatment.

3,684,260

RADIATION REGENERATIVE BURNER

Charles W. Solbrig, Idaho Falls, Idaho, assignor to Institute of Gas Technology

Filed Oct. 19, 1970, Ser. No. 81,998
Int. Cl. F23d 13/12
U.S. Cl. 263—19 R 16 Claims



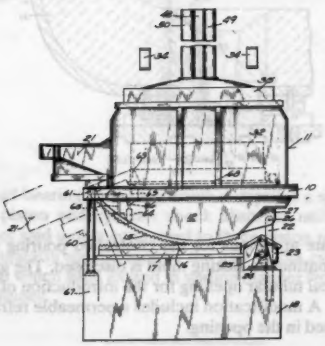
A method and device for increasing the overall efficiency of transfer of energy from a gas-fueled radiant burner to a load which contemplates the use of at least one reradiator and preheater for the fuel and air mixture.

3,684,261

ELECTRIC FURNACE SUPERSTRUCTURE SWING INTERLOCK

Peter J. Wynne, Allegheny County, Pa., assignor to Lectromelt Corporation

Filed Oct. 26, 1970, Ser. No. 83,853
Int. Cl. F27b 7/12
U.S. Cl. 263—33 A 3 Claims



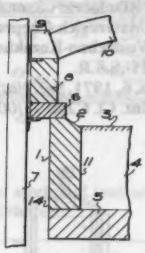
The cover of a full-platform electric furnace is supported on a superstructure which allows the cover to be raised and lowered with respect to the furnace and to be swung away from the top of the furnace when it is lifted. An interlock means is provided for preventing the furnace from being tilted unless the superstructure is in its home position and the cover is aligned with the furnace top.

3,684,262

GLASS FURNACES

Terence Stanley Busby, Sheffield, England, assignor to National Research Development Corporation

Filed Sept. 24, 1970, Ser. No. 75,208
Int. Cl. F27b 3/00
U.S. Cl. 263—40 R 8 Claims



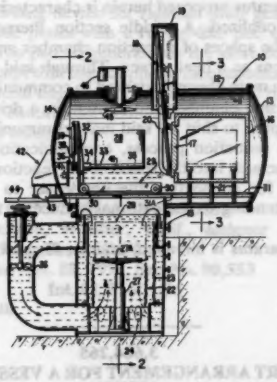
A glass furnace having its side walls chamfered at the top within the range of more than 30° to 45° to the horizontal from their inner vertical face over a substantial portion of the width of the top of the walls, whereby the resultant chamfered surface includes the flux line when the furnace is in use.

3,684,263

VACUUM OIL QUENCH FURNACE

Kurt Genrich, Oak Park, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Feb. 12, 1970, Ser. No. 10,923
Int. Cl. C21d 1/66
U.S. Cl. 266—4 A 6 Claims

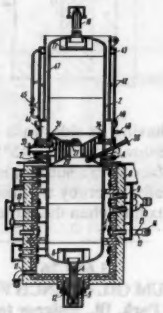


A vacuum quenching apparatus comprises a vacuum chamber in which is mounted a heating furnace and a quenching tank. A dolly rides on rails from a position over the quenching tank to a position adjacent the furnace and is provided with parallel supporting arms which support a load therebetween and which extend into the furnace when the dolly is positioned adjacent thereto. The arms are counter-rotatable so as to release a load and permit the load to descend vertically downwardly either within the furnace or upon a hydraulic cylinder mounted within the quench tank. An end of the chamber is also displaceable, and the dolly moves outwardly with the displaceable end to permit loading or unloading.

3,684,264
APPARATUS FOR REDUCTION OF TITANIUM HALIDES AND SUBSEQUENT VACUUM SEPARATION OF REDUCTION PRODUCTS

Vasily Ivanovich Petrov, Gavanskaya ulitsa, 10, kv. 2; Boris Nikolaevich Svetlichny, Kirovsky prospekt, 37b, kv. 6; Jury Alexeevich Demidov, Turbinnaya ulitsa, 11, kv. 96; Nikolai Mikhailovich Elin, Nalichnaya ulitsa, 21, kv. 105; Vladimir Petrovich Cherepanov, Suvorovsky prospekt, 56, kv. 89, all of Leningrad; Ivan Nikolaevich Samuilov, ulitsa Novoselov, 3, kv. 18, and Ivan Matveevich Cheprasov, ulitsa Novoselov, 6, kv. 16, both of Vostochno-Kazakhstanskaya oblast, Ust-Kamenogorsk, all of U.S.S.R.

Filed Jan. 6, 1971, Ser. No. 104,230
Int. Cl. C22b *53/00*
U.S. Cl. 266—9 4 Claims



The present invention relates to the art of producing refractory metals, and more particularly to apparatus for magnesium thermoreduction of titanium halides and subsequent vacuum separation of the reduction products.

The apparatus proposed herein is characterized by that it is made sectionalized. A middle section thereof hermetically separates the spaces of a reaction chamber and a condenser, and functions as a heat screen. Through said middle section there pass a main channel adapted to communicate the spaces of the reaction chamber and consenser, a drive of a locking means adapted to shut off said main communication channel during the reduction process, communication channels for feeding reactants into the space of the reaction chamber, and a channel for connecting the condenser to an evacuation system, extending to the external surface of the middle section.

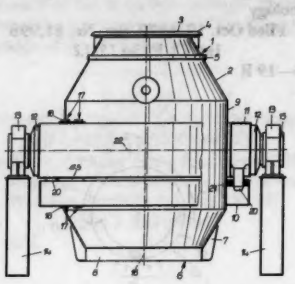
The apparatus is intended, mainly, for producing titanium sponge.

3,684,265
SUPPORT ARRANGEMENT FOR A VESSEL USED IN HIGH TEMPERATURE OPERATIONS

Karl Heinrich Mahringer, Duisburg-Hamborn, and Karlheinz Langlitz, Mulheim/Ruhr, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Feb. 3, 1970, Ser. No. 8,240
Claims priority, application Germany, March 10, 1969, P 19 11 948.3
Int. Cl. C21c *5/42*
U.S. Cl. 266—36 P 10 Claims

In an arrangement for supporting a vessel, which is used in high temperature operations, the vessel is supported from a support ring spaced from the vessel. A reinforcing ring is positioned about the vessel and tensile stress elements extend from the reinforcing ring to the support ring which is pivotally mounted. The tensile stress elements are formed of a plurality of individual wires and can be adjustably prestressed. Additionally, bolt-like members secured to the support ring and articulated to the reinforcing ring also provide support for the



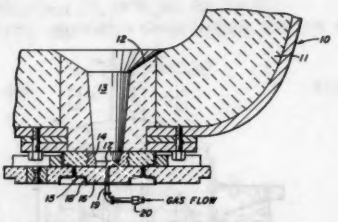
vessel so that it can be properly sustained in its normal upright position and also when it is tilted from its upright position.

3,684,266
Patent Not Issued For This Number

3,684,267
APPARATUS FOR INTRODUCING GAS TO HOT METAL IN A BOTTOM-POUR VESSEL

Sigmund L. Andrzejak, Chicago, Ill.; Michael A. Orehoski, Duquesne, and James T. Shapland, Wilkins Township, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Jan. 12, 1970, Ser. No. 2,224
Int. Cl. C21b *7/14*; B67d *1/08*
U.S. Cl. 266—38 9 Claims



A sliding gate apparatus for the controlled pouring of hot metal into a continuous casting mold is disclosed. The gate includes a vertical tubular opening for the introduction of gas to the hot metal. A modification includes a permeable refractory block positioned in the opening.

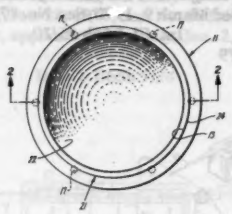
3,684,268
SOURCE FOR EVAPORATING MATERIALS

Vernon C. Spellman, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed April 17, 1970, Ser. No. 29,410
Int. Cl. F27b *14/10*
U.S. Cl. 266—39 8 Claims

Source for use in evaporating materials consisting of a crucible and a liner seated in the crucible. The crucible and

the liner are provided with inclined mating surfaces and are sized such that the liner is spaced a slight distance above the



top surface of the bottom wall of the recess in the crucible in which the liner is seated.

3,684,269

LOAD-BEARING SPRING LEG

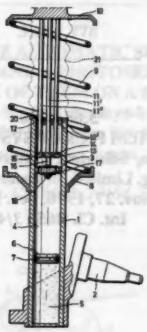
Carl Ullrich Peddinghaus, Obere Lichtenplatzer, St. 276, Wuppertal-Barmen, Germany

Filed July 24, 1970, Ser. No. 58,057

Claims priority, application Germany, July 25, 1969, P 19 37 739.0

Int. Cl. F16f 9/06

U.S. Cl. 267—64 **6 Claims**



A load bearing spring leg which comprises a spring element and a piston and cylinder shock absorber unit wherein the piston of said unit is connected to three piston rods which are equi-angularly spaced around the axis of the cylinder of said unit and which each extend in sealing manner from one end of said cylinder.

3,684,270

COMPOUND SPRING ASSEMBLY

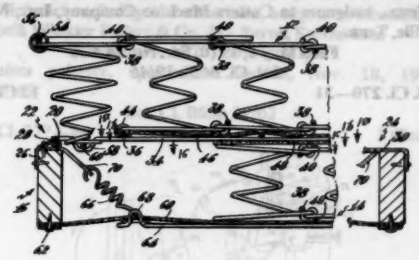
Clarence W. Earle, North Oxford, Mass., assignor to Webster Spring Co., Inc., Oxford, Mass.

Filed July 8, 1970, Ser. No. 53,182

Int. Cl. F16c 3/04

U.S. Cl. 267—92 **5 Claims**

A compound spring assembly comprising an upper assembly of connected coils supported by a grid at the upper side of a rigid frame, and a buttressing assembly of connected coils supported within the frame at the underside of the grid in compression by a member stretched taut across the underside of the frame and secured thereto.



3,684,271

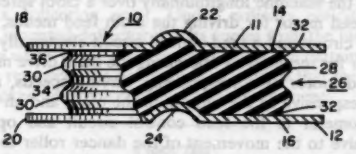
SHOCK ABSORBING DEVICE FOR DRAFT GEAR

Gene M. Arthur, Norwalk, Ohio, assignor to Clevite Corporation

Filed Oct. 9, 1970, Ser. No. 79,512

Int. Cl. F16f 1/40

U.S. Cl. 267—152 **6 Claims**



A shock absorbing device for railroad draft gear having a pair of metal side plates with a rubber-like pad sandwiched therebetween. The pad, in general, has the same outline form as the plates except that the peripheral face terminates spaced from the peripheral edges of the plates. The pad has two circumferentially continuous, convexedly extending ridges between its axial ends.

3,684,272

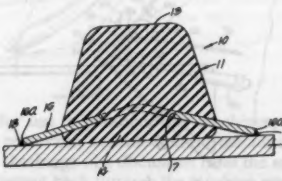
CONFORMABLE FENDER

William C. Ticknor, Whittier, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed Nov. 18, 1970, Ser. No. 90,553

Int. Cl. F16f 1/36

U.S. Cl. 267—140 **10 Claims**



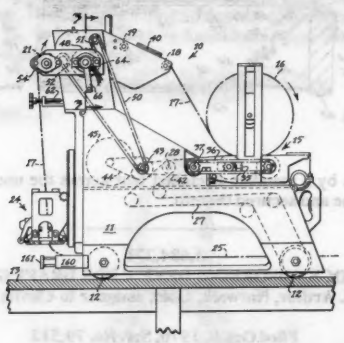
A device for absorbing the impact between convergent and contiguous bodies due to relative movement therebetween, the device being conformable and weldable to the surface, either flat or contoured, of one of the bodies for resilient contact with the opposing body to cushion the blows of collision, dragging, or scuffing, and thus also alleviating damage to the bodies.

3,684,273

CLOTH FEED CONTROL FOR SPREADING MACHINE

Robert W. Benson, and Robert G. Reed, both of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed May 4, 1970, Ser. No. 34,426
Int. Cl. B65h 29/46
U.S. Cl. 270—31 12 Claims



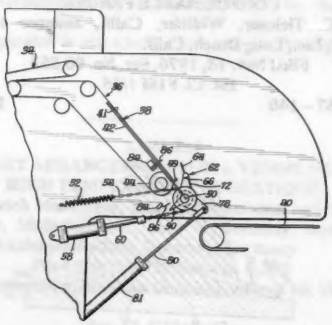
A cloth spreading machine supporting a cloth roll, a spreader unit, and means positively feeding the cloth from the roll to the spreader unit, a main drive motor for reciprocably moving the machine longitudinally over a cloth spreading table, a feed motor for driving the cloth feed means, a motor control circuit and a feed control circuit electrically coupled together for respectively energizing the main drive motor and the feed motor at corresponding varying speeds, a dancer roller responsive to the tension in the cloth and an overfeed potentiometer in the feed control circuit and operatively responsive to the movement of the dancer roller to vary the speed of the feed motor in order to supply the cloth feed demands of the spreading machine.

3,684,274

LAUNDRY FOLDER WITH WICKET CLAMP

Frederick W. Grantham, and Edward L. McClain, both of 152 W. Pico Blvd., Los Angeles, Calif.

Filed June 10, 1970, Ser. No. 45,188
Int. Cl. B65h 45/12
U.S. Cl. 270—62 10 Claims



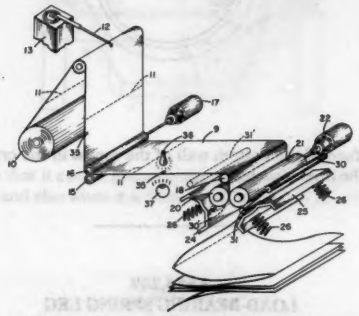
A laundry folder having a wicket for positively placing the laundry pieces on a supporting surface after final folding, and a gripper blade for gripping the pieces on the wicket to hold them from flying off, and including operating means for releasing the gripper blade immediately upon the pieces being so placed so that the wicket can return without disturbing those pieces which have already been placed.

3,684,275

DEVICE FOR ZIG-ZAG FOLDING AN OSCILLOGRAPHIC RECORD CHART

Earl O. Schweitzer, Wickliffe, and Ronald J. Geil, Strongsville, both of Ohio, assignors to Clevite Corporation

Filed March 9, 1970, Ser. No. 17,522
Int. Cl. B65h 45/20
U.S. Cl. 270—79 4 Claims



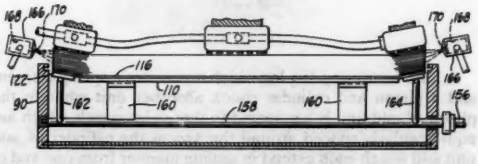
An oscillographic record chart zig-zag folding device is disclosed, wherein the record chart is pre-cut or scored at regular intervals. A mechanism alternately front-folds and back-folds the chart at the pre-scored locations and a photo-cell device senses timing marks on the chart and synchronizes the folding actions. The chart can be driven at any of a number of different speeds.

3,684,276

FILM PICKUP SYSTEM

Cecil K. Bridgeman, Islington, Ontario, Canada, assignor to Picker X-Ray Mfg. Limited, Bramalea, Ontario, Canada

Filed Nov. 27, 1970, Ser. No. 93,381
Int. Cl. B65h 3/48
U.S. Cl. 271—20 8 Claims



An x-ray apparatus is disclosed in which a sheet of film is selected for exposure, advanced to an exposure station from a film supply magazine and, after exposure, is transported to an exposed film magazine. A film pickup system removes a sheet of film from a stack of sheets in the supply magazine and comprises a sheet supporting assembly and an actuator for moving a sheet on one side of the stack into engagement with part of the sheet supporting assembly. The stack is flexed relative to the sheet engaging the supporting assembly so that the sheet is readily separated and removed from the stack for exposure.

3,684,277

APPARATUS FOR BRAKING, OVERLAPPING AND STACKING SHEETS OF MATERIAL

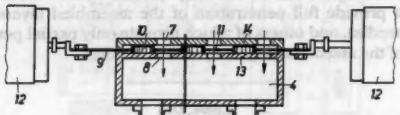
Gerhard Buschmann, Dusseldorf, Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Germany

Filed Dec. 28, 1970, Ser. No. 101,653

Claims priority, application Germany, Jan. 2, 1970, P 20 00 078.6

Int. Cl. B65h 5/24

U.S. Cl. 271—46 7 Claims



In an apparatus wherein a rotating roll of sheet material is cut into sheets of predetermined size which are advanced, braked, overlapped and stacked, using suction to brake the moving sheets, a special control belt is provided to minimize wear. The control belt is provided with perforations which, upon displacement of the belt, may be registered with openings in the suction box to transmit suction to the belt. The belt has additional holes or channels, alternated with the suction perforations, in which are seated sliding gaskets. The gaskets contact and move along a glide surface but the belt is out of contact with any surface so that the belt is not subject to wear, only the gaskets.

If the belt is endless, means are provided to prevent the gaskets from falling out of their positions during the return leg of the belt movement. Means are also provided to prevent slippage between the belt and its drive.

3,684,278

APPARATUS FOR THE AUTOMATIC SEPARATION OF A NEGATIVE SHEET AND A PHOTOSENSITIVE SHEET FROM THE STACK OF THEM ON A PHOTOCOPIER

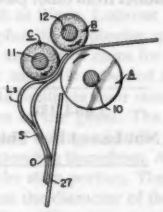
Isao Takahaski, 5-2-12, Sendagi, Bunkyo-ky, Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,381

Claims priority, application Japan, Dec. 16, 1969, 44/118966

Int. Cl. B65h 29/64

U.S. Cl. 271—64 3 Claims



The automatic separator for the separation of a sheet stack consisting of a negative sheet and a photosensitive sheet into its constituent sheets after exposure in a photocopier comprises a continuously rotating feed roll and a reversibly rotatable separator roll cooperating therewith to momentarily drive the negative sheet and the photosensitive sheet in opposite directions. A pressure roller also cooperates with the feed roll and is arranged to keep the remaining sheet under pressure along a predetermined length of the peripheral surface of said feed roll and in cooperation with said reversibly rotatable separator roll. The direction of rotation of the pressure roller is dependent upon the direction of movement of the sheet of the stacks in contact therewith.

3,684,279

DEVICE FOR REMOVING COPIES FROM NORMAL PATH OF TRAVEL

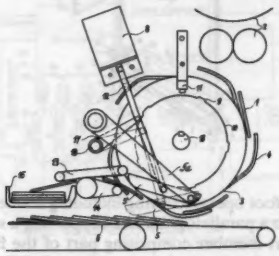
Paul Heimlicher, Bolligen, Switzerland, assignor to Maschinenfabrik Winkler Fallert & Co. AG, Berns, Switzerland

Filed Nov. 9, 1970, Ser. No. 87,811

Claims priority, application Sweden, Nov. 18, 1969, 15839/69

Int. Cl. B65h 29/62

U.S. Cl. 271—64 3 Claims



In apparatus for normally conveying copies to a delivery chute or the like, such as in a printing or folding machine, copies can be diverted from the normal path of travel and supplied to a conveyor belt arrangement for removing certain copies to a collection point. Under ordinary conditions, a pivotally mounted deflector directs copies from the blades on a delivery wheel to the delivery chute and when certain copies are to be removed, the deflector is pivoted so that the copies can be picked up by the conveyor belt arrangement.

3,684,280

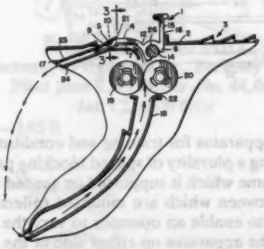
DIVERTERS

Abe Samuels, Chicago, and Rudolph C. Mueller, Schiller Park, both of Ill., assignors to Speed-O-Print Business Machines Corporation, Chicago, Ill.

Filed Dec. 11, 1970, Ser. No. 97,269

Int. Cl. B65h 29/60

U.S. Cl. 271—64 7 Claims



A diverter for use in photocopying machines, or the like, which may be removably mounted on the machine in position to prevent the discharge of a document from the machine and direct the document back through the machine when multiple copies of the document are desired.

3,684,281

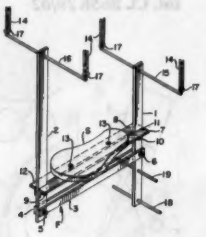
Patent Not Issued For This Number

3,684,282

HAND AND FOOT OPERATED SWING

Eric F. Harms, Readlyn, Iowa, assignor to Alan Harms, Charmian, Pa.

Filed March 13, 1970, Ser. No. 19,229
Int. Cl. A63g *9/16*
U.S. Cl. 272—87 **1 Claim**



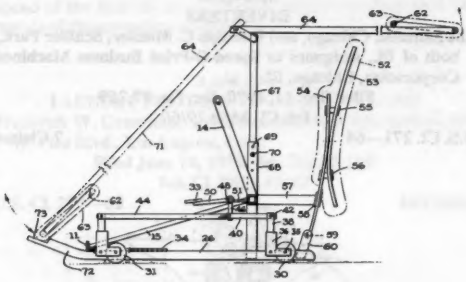
Ahand and foot operated swing including frame means connected to form a parallelogram and supporting a seat thereon, a front support member comprising part of the frame means and having hand grips and foot pedals of different heights thereon for enabling a rider to impart force to the hand grips and foot pedals to cause swinging movement to said swing.

3,684,283

WHEELED FOOTBALL TRAINING SLED HAVING OVERHEAD CHUTE

Charles P. Forrest, P.O. Box 426, 253 Blue Island Ave., Fairhope, Ala.

Filed Sept. 15, 1969, Ser. No. 857,908
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **5 Claims**



A charging apparatus for training and conditioning football players including a plurality of spaced blocking pads yieldingly carried on a frame which is supported on spaced rails or channel runners between which are mounted rollers controllable by foot pedals to enable an operator to vary the resistance to movement of the apparatus on either side of the apparatus. A chute selectably adjustable in height is mounted above the pads to train players to stay low when firing out.

3,684,284

PILE FABRIC METHOD AND PRODUCT

George Tranfield, Hatfield, Pa., assignor to Chas. W. House & Sons Incorporated, Unionville, Conn.

Filed Sept. 18, 1970, Ser. No. 73,330
Int. Cl. A63b *39/06*; D03d *27/00*; D04h *11/00*
U.S. Cl. 273—61 R **7 Claims**

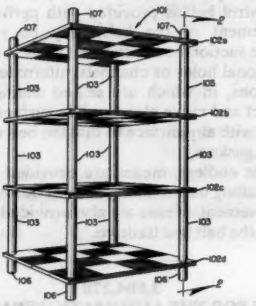
A pile fabric designed particularly for use as a cover of a tennis ball. The fabric has a base structure comprising knitted cotton yarns, preferably in two layers laid back-to-back. A pile surface is provided on one side of the base structure by a fleece preferably composed of a plurality of carded webs having synthetic components including polyester, acrylic, polypropylene fibers. The webs are integrated with one another and with the base structure by the fibrous components of the webs passing substantially perpendicular to the plane of the webs through the adjoining webs and the base structure. When the disclosed fabric is used as a tennis ball cover, it is cut into blanks of conventional configuration and applied to the core structure of the tennis ball by suitable adhesives. The integration of the webs and base structure into a unitary fabric is effected by a series of needling operations, selected ones of which provide full penetration of the assembled layers with fine needles, and others of which provide only partial penetration of the assembled layers by course needles.

3,684,285

CHESS GAME APPARATUS

John Robert Kane, 13086 E. Alaska Ave., Aurora, Colo.

Filed June 19, 1970, Ser. No. 47,817
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AC **2 Claims**



A chess game apparatus is disclosed having a game board comprised of four vertically spaced-apart layer members. Each layer member has a square-shaped checkboard pattern formed by 16 squares on its upper surface and is preferably supported in a horizontal plane. The game is for play by two opponents, each using a chess set of eight pawns, two rooks, two knights, two bishops, one queen and one king. Four of the pawns of each chess set are distinctively marked so as to permit identification distinct from other pawns.

3,684,286

Patent Not Issued For This Number

3,684,287

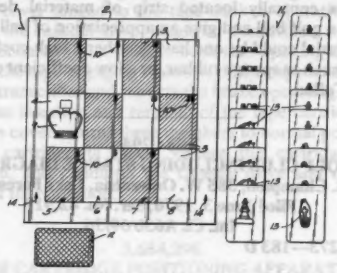
BOARD GAME APPARATUS

Matthew T. Welter, R.R. 1, County Trunk G, Nekoosa, Wis.

Filed Jan. 4, 1971, Ser. No. 103,753
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 K **8 Claims**

A game for play by two persons which includes a game board divided into a plurality of spaces arranged in rows. Identifying means representing a chess king is disposed on one of the spaces and comprises a closed space in relation to which the play of the game is directed, with all other spaces being open for play. Playing cards having chess indicia thereon

representing various chess pieces are playable on the spaces open for play. The chess indicia on the cards determine the



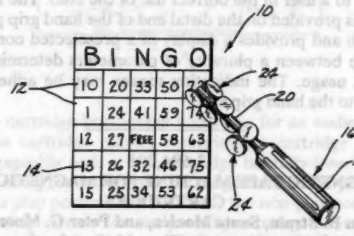
relation of the cards to the closed space occupied by the chess king and the other cards when played on the other spaces.

3,684,288

BOARD GAME APPARATUS

John M. Grace, 3416 Hawthorne Ave., Omaha, Nebr.

Filed Aug. 6, 1970, Ser. No. 61,752
Int. Cl. A63f 3/06
U.S. Cl. 273—135 AD **2 Claims**



A game device such as Bingo, Lotto or Beano comprising a game card having a plurality of playing spaces thereon and a plurality of magnetic markers or chips for placement thereon. A magnetic collector means is provided for magnetically attracting the markers to facilitate their removal from the game card upon completion of the game. The magnetic collector means comprises a wand having a handle portion and a cylindrical stem portion extending therefrom. A cylindrical magnet means is mounted in the stem portion. The handle portion has a diameter greater than the diameter of the stem portion with the stem portion having a diameter greater than the diameter of the magnet means. The stem portion has a length sufficient so as to receive several markers along its length. The stem portion and the magnet means construction are such so as to provide sufficient magnetic attraction along the length of the stem portion to cause the markers to move upwardly and to adhere to the full length of the stem portion as the stem portion is passed over the game card.

3,684,289

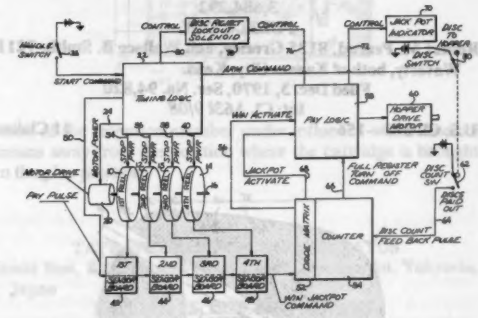
Patent Not Issued For This Number

3,684,290

ELECTRICALLY OPERATED PLURAL REEL CHANCE DEVICE

Ronald G. Wayne, Canoga Park, Calif., assignor to Centaur Mini Computer Devices, Inc., New York, N.Y.

Filed June 9, 1969, Ser. No. 831,623
Int. Cl. A63f 5/04
U.S. Cl. 273—143 C **12 Claims**



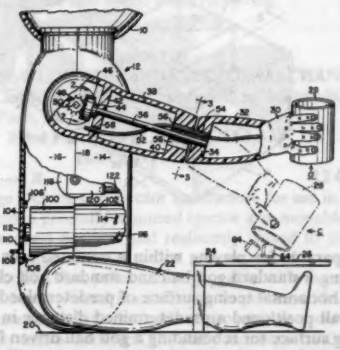
An electronically operated gaming device is described which detects the relative position of a plurality of rotatably mounted reels. The amusement device is the type which is activated by a disc operated switch and which can thereinafter be enabled by an arm or handle connected to the gaming device. The handle trips a drive motor which in turn activates timing logic having a plurality of timed outputs. Each timed output activates a reel stopping mechanism and a further time delay. This time delay activates the next corresponding reel stop mechanism, and so on, until all reel mechanisms are stopped. The timing delay logic also in turn activates position sensor boards which detects the relative position of the reels with one another. The positions of the reels may or may not be indicative of a pay-off sequence. A diode matrix responsive to the sensor boards loads the maximum count a counter may have to register full. The diode matrix simultaneously starts a plurality of signals into pay logic. The pay logic starts a hopper motor which mechanically dispenses a number of discs. Discs dispensing from the hopper energize a disc count switch which feeds count pulses into the counter. The counter then counts up on these pulses until full. Thereafter a full register count is applied to the pay logic which stops the hopper motor.

3,684,291

DICE THROWING DOLL

Frank T. Johmann, 49 Hampton Dr., Berkeley Heights, N.J.

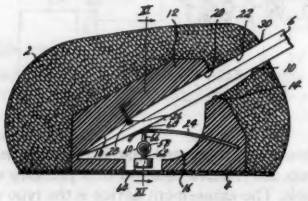
Filed June 8, 1970, Ser. No. 44,063
Int. Cl. A63f 9/04
U.S. Cl. 273—145 R **6 Claims**



This invention relates to toys. In one aspect, the invention

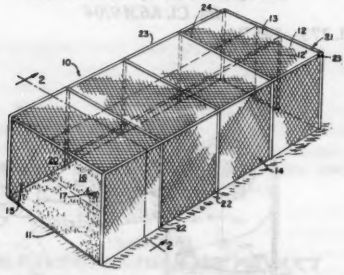
relates to a doll having a movable hand driven by an electric motor, preferably battery operated, which hand can move through a sequence of positions. The doll may be constructed so its hand will shake and throw down a pair of dice placed in its hand, and thus may be part of a game set including a game board, and dice wherein markers are moved on the game board a certain number of spaces determined by throwing dice.

3,684,292
PUZZLE TOY
Robert M. Penrod, 8135 Greeley, and Wallace B. Smith, 7211 Waverly, both of Kansas City, Kans.
Filed Dec. 3, 1970, Ser. No. 94,820
Int. Cl. A63f 9/08
U.S. Cl. 273—156 **11 Claims**



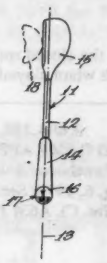
A puzzle toy consisting of a body member, a rod-like member adapted to be inserted into an aperture of said body member, and a locking mechanism operable to engage and secure said rod in said body member, said locking mechanism being releasable by a pre-determined but secret relative movement of said body member and said rod to permit withdrawal of said rod, with or without additional mechanism further preventing release of said locking mechanism or withdrawal of said rod, said further mechanism being operable by predetermined movements or positioning of the body member itself, or by positioning a magnet adjacent the exterior of said body member.

3,684,293
GOLF GAME APPARATUS
George D. Brooks, Manor Woods, Apt. 28, Kennedy Dr. S., S. Burlington, Vt.
Filed Jan. 26, 1970, Ser. No. 5,646
Int. Cl. A63b 67/02, 69/36
U.S. Cl. 273—176 F **1 Claim**



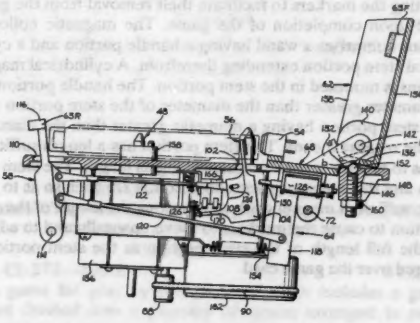
Apparatus for playing within a confined area a golf game utilizing a standard golf ball and standard golf clubs comprising a horizontal teeing surface of predetermined size, a vertical wall positioned a predetermined distance in front of said teeing surface for rebounding a golf ball driven from said teeing surface toward said rebound means, a ceiling surface extending from the vertical wall towards the teeing surface, a landing surface of predetermined positioned for receiving the ball after it rebounds from the wall or ceiling surface, and a golf cup depressed in said landing surface, said landing surface being a continuation of said teeing surface in the direction of said rebound means. The vertical wall and ceiling surface each include a centrally located strip of material designed to rebound a golf ball and give an appreciation of ball spin. The strip material could be one having either a high coeffecient of friction, such as sponge rubber, or a low coefficient of friction, such as Teflon.

3,684,294
GOLF CLUB INCLUDING STANCE DIAGRAM
Robert S. Champion, 385 W. Onwentsia, Lake Forest, Ill.
Filed June 3, 1970, Ser. No. 42,917
Int. Cl. A63b 69/36
U.S. Cl. 273—183 D **9 Claims**



A golf club assembly arranged to provide self-guiding indications to a user in the correct use of the club. The indicating means is provided on the distal end of the hand grip portion of the club and provides a display of a preselected correct relationship between a plurality of parameters determining such correct usage. The indicating means may be adhesively attached to the hand grip end.

3,684,295
MAGNETIC TAPE MACHINE FOR MAGNETIC TAPE CARTRIDGES
William H. Strain, Santa Monica, and Peter G. Moore, Venice, both of Calif., assignors to Wescal Industries, Inc., El Segundo, Calif.
Filed April 10, 1970, Ser. No. 27,402
Int. Cl. G11b 5/10
U.S. Cl. 274—4 C **11 Claims**



A magnetic tape machine for use with a tape cartridge having an exposed transcribing run of magnetic tape and a brake

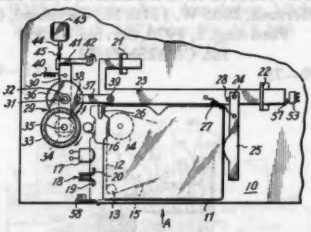
for the tape reels. The tape machine has a tape deck mounting a pair of motor driven spindles for drivably engaging the cartridge reels, a capstan drive and a magnetic transcriber including tape-engaging members for straddling the exposed run of cartridge tape, and a cartridge brake release mechanism including a brake operating member for releasing the cartridge brake. A cover hinged to the tape deck is operatively connected to the capstan drive, magnetic transcriber, and brake release mechanism in a manner such that opening the cover separates the tape-engaging members of the capstan drive and magnetic transcriber and retracts the brake operating member to facilitate insertion and removal of the tape cartridge, and closing the cover returns these members to normal position to lock the cartridge in place, release the cartridge brake mechanism, and condition the capstan drive and magnetic transcriber for operation.

3,684,296

TAPE CARTRIDGE POSITIONING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed May 5, 1970, Ser. No. 34,825
Int. Cl. G11b *15/29*
U.S. Cl. 274—4 B **5 Claims**



A tape cartridge positioning apparatus for an endless magnetic tape cartridge player, comprising a cartridge moving lever engageable with a tape cartridge laterally inserted in a player housing for moving the cartridge from a non-play position into a play position and back into the non-play position, a lever moving device for reciprocally moving the cartridge moving lever by use of rotational force of the magnetic tape, and a control device for controlling operation of the lever moving device and wherein the control device permits of operation of the lever moving device to allow the cartridge moving lever to move from a first position to a second position to thus move the cartridge into a play position and to play the cartridge, and then the control device again permits of operation of the lever moving device to allow the cartridge moving lever to move from the second position into the first position whereby the cartridge is moved into the non-play position to end the play of the cartridge.

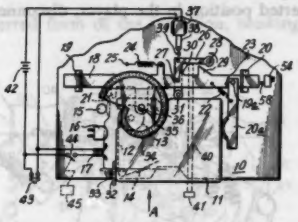
3,684,297

TAPE CARTRIDGE PLAY CONTROL APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed May 19, 1970, Ser. No. 38,779
Int. Cl. G11b *23/04*
U.S. Cl. 274—4 B **6 Claims**

A tape cartridge play control apparatus for an endless magnetic tape cartridge in a play position comprises a moving means for reciprocating a retention member between two positions where the cartridge is urged to the play position or not urged thereto by use of rotational force of a rotary capstan for driving the tape within the cartridge in cooperation with the pinch roller within the cartridge, and a control means for controlling operating of the moving means whereby the play of the cartridge is automatically ended in response to movement of the retention member under influence of the control means away from the position where the cartridge is brought to the play position.

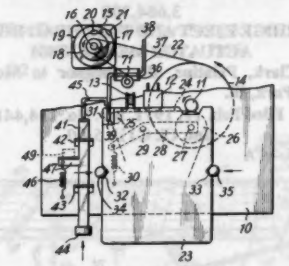


3,684,298

TAPE SPEED CHANGING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed June 25, 1970, Ser. No. 48,009
Int. Cl. G11b *19/26, 15/44*
U.S. Cl. 274—4 D **5 Claims**



A tape speed changing apparatus in an endless magnetic tape cartridge player comprising a capstan for driving the tape, a motor rotatably driving the capstan, a plurality of pulleys mounted to the output of the motor and having different diameters from each other, a belt extending between one pulley and the flywheel on the capstan to impart rotation of the one of the pulleys to the capstan, and a shift means for moving the belt to selectively shift the belt from pulley to pulley, and wherein the shift means is selectively operated by the cartridge set in the predetermined operative position, the rotational speed of the capstan being automatically changed to vary the tape drive speed in accordance with the class of the cartridge having the tape speed when recording.

3,684,299

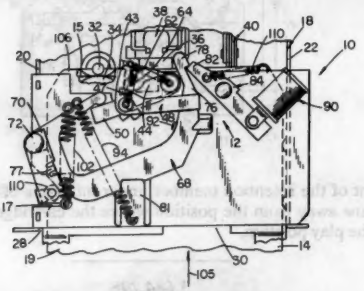
CARTRIDGE LOCKING AND EJECTOR MECHANISM

Alfred J. Clark, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 8, 1971, Ser. No. 113,533
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **12 Claims**

A cartridge locking and ejector mechanism for use in a tape player includes a pivotally mounted ejector arm movable from a first to a second position and resiliently biased to the first position. A linkage includes a first arm mounted for pivotal movement about a first point and engageable with the ejector arm, a second arm pivotal about the same point and having a projection extending into the path of a cartridge received in the tap player and a third arm pivotally mounted on the first arm and releasably interconnecting the first and second arms.

A cartridge inserted into the player engages the projection, causing the linkage to move the ejector arm to the second position whereat a solenoid operated latching assembly secures the ejector arm. Further insertion of the cartridge to its fully inserted position in the player, disconnects the first



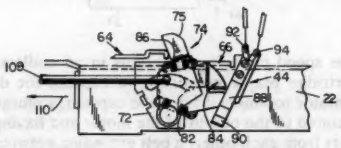
and second arms permitting the second arm to move with the cartridge. Upon reaching a fully inserted position in the player, a spring biased roller is received in a notch in the cartridge wall to maintain the cartridge secured in the player. Deenergization of the solenoid releases the ejector arm, causing the ejection of the cartridge from the player.

3,684,300

CARTRIDGE EJECT AND TAPE HEAD INDEXING ACTUATOR MECHANISM

Alfred J. Clark, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 11, 1971, Ser. No. 114,441
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 A **12 Claims**



A magnetic tape head indexing and cartridge eject actuator mechanism for a tape player which uses exchangeable multitrack tape cartridges, includes a pair of pivotally mounted arms each spring biased to first positions and rotatable in opposite directions against corresponding biasing springs to second positions. A manually operated actuator rod connected to both arms is movable in a first direction to rotate the first arm to the second position, whereby the first arm engages and operates a cartridge eject mechanism and in a second direction to rotate the second arm to the second position, whereby the second arm actuates magnetic tape head indexing apparatus.

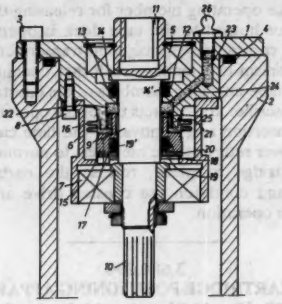
3,684,301

ROTATING SHAFT SEAL ASSEMBLY

Claude Rene Jean Malaval, 39, rue des Coquelicots, 92 Anthony, France

Filed Dec. 22, 1970, Ser. No. 100,731
Claims priority, application France, Dec. 22, 1969, 6944468
Int. Cl. F17j *15/40*
U.S. Cl. 277—59 **6 Claims**

A watertight seal for a shaft turning through a wall separating two fluids under very different pressures or at very different viscosity comprises a part fixed to the wall and a part sliding in the latter. In each of the parts, an O ring joint has a pressure ring surrounding the shaft. Between both parts, there



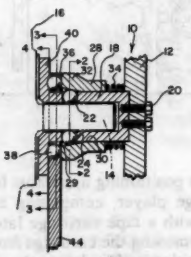
is a cavity containing a fluid of very high viscosity and splines provided on both parts guide the sliding movement and prevent the rotation of the mobile part.

3,684,302

CENTERING AND HOLDING FIXTURE

Martin A. Herman, 2085 W. 114th St., Cleveland, Ohio

Filed Aug. 5, 1970, Ser. No. 61,351
Int. Cl. B23b *31/22*
U.S. Cl. 279—75 **9 Claims**



Disclosed is a quick-acting centering and holding fixture. The fixture has a hollow inner sleeve which has a series of bores extending radially through its walls and uniformly spaced on the circumference. Steel balls of greater diameter than the sleeve walls are carried in the bores. An outer sleeve which has a tapered bore slides over the inner sleeve and forces the balls radially inwardly to hold and center the part being clamped. Suitable means between the outer sleeve and a shoulder of the inner sleeve serves to force the inner sleeve along the outer sleeve so that the balls may be retracted into the tapered portion of the bore of the outer sleeve.

3,684,303

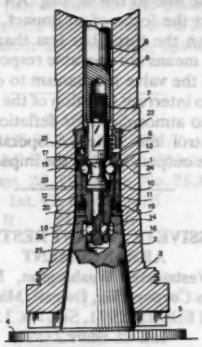
DEVICE FOR LOCKING A TOOL ON A SPINDLE OF A MACHINE TOOL

Primo Serra, Ivrea, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Jan. 15, 1971, Ser. No. 106,862
Claims priority, application Italy, Jan. 16, 1970, 67128 A/70
Int. Cl. B23b *31/06*
U.S. Cl. 279—82 **6 Claims**

Apparatus for locking a shank of a tool to a spindle of a machine tool device comprising first and second sets of balls housed in radial recesses of a bushing which is slidable relative to the spindle and is housed within a fixed sleeve. A rod is provided within the bushing to drive the first set of balls into recesses in the tool shank. The rod includes a tapered conical

section which cooperates with a conical section of the sleeve to cam the second balls into position in the bushing so that the



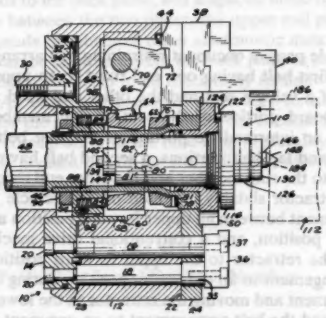
bushing moves with the rod but at reduced speed relative to the speed of movement of the rod.

3,684,304

COMPENSATING-UNIVERSAL CHUCK

William R. Dexter, Royal Oak; William R. Jahnke, Rochester, and Edward Kimmen, Grosse Pointe Shores, all of Mich., assignors to HMS Industries, Inc., Ann Arbor, Mich.

Filed Feb. 8, 1971, Ser. No. 113,145
Int. Cl. B23b *31/16*
U.S. Cl. 279—119 **22 Claims**



A chuck with a plurality of jaws for gripping a workpiece which is operable in both the compensating and universal modes. In both modes end faces of workpieces gripped by the jaws are urged into engagement with rest pads to assure that all workpieces are held in the same axially spaced position from a spindle of a machine tool to which the chuck is secured. In the universal mode a center support assembly is axially received between the jaws of the chuck. The support assembly has a center pin which can be releasably locked by a locking member in various positions of axial displacement to assure that the center pin firmly engages in a center hole in the end face of the workpiece. Firm engagement of the center pin with the center hole assures that the workpiece will not be displaced or shifted by the stresses to which it is subjected during heavy cutting operations.

3,684,305

ROLLER SKI APPARATUS

Benjamin J. McDonald, and Dorothy H. McDonald, both of 7943 Haskell Ave., Saugus, Calif.

Filed Aug. 17, 1970, Ser. No. 64,407
Int. Cl. A63c *17/04*
U.S. Cl. 280—11.19 **9 Claims**

A foot platform is supported by front and rear rollers for rolling travel, and is provided with a control handle, simulating a ski pole, attached to its side margin for limited fore-aft swinging movement such as to facilitate banking control by a rider standing on the platform, whereby to effect steering control.

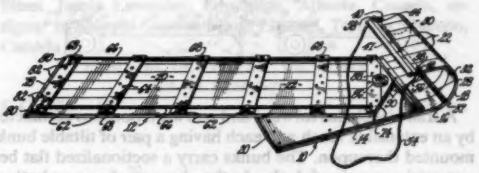
In a preferred form of the invention, banking rollers attached to the side margins of the platform at a level above that of the front and rear main travel rollers, are adapted to contact the ground surface at respective limits of lateral tilt to determine such limits and to prevent dragging of the side margins against the ground.

3,684,306

STEERABLE TOBOGGAN

William G. Rathmann, 11712 S. Hawthorne Blvd., Hawthorne, Calif.

Filed Dec. 31, 1970, Ser. No. 103,156
Int. Cl. B62b *13/08, 17/00*
U.S. Cl. 280—22 **13 Claims**



In a pivotally connected, two-piece steerable toboggan having front and back sections, improved steering characteristics are obtained by locating the pivotal connection for the sections within the front half of the flat portion of the front section and substantially intermediate to the sides thereof.

3,684,307

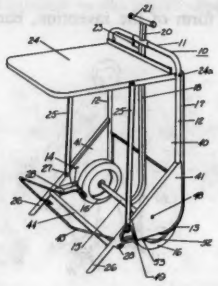
OFFICE MACHINE CART

Elroy E. Bourgraf, Cincinnati, and Kenneth R. Self, Washington, both of Ohio, assignors to Ferno-Washington, Inc., Greenfield, Ohio

Filed March 29, 1971, Ser. No. 128,877
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C **8 Claims**

A cart having a collapsed and an erect condition, and adapted for transporting and demonstrating office machines. The cart includes a machine supporting surface or table element on which a machine may rest for demonstration, and to which it may be secured for transportation. In the collapsed condition, the table member is folded down with the machine secured thereto. An adjustable tongue or draw bar is provided by means of which the user may pull or push the cart. In the erect condition the table member is raised to the horizontal at a normal working height for a seated operator, and may be locked in this condition. The cart, in its erect condition, rests on a pair of wheels and a pair of minor leg members. The frame of the cart, on the side from which it is pushed or pulled

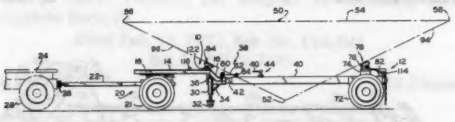
when in collapsed condition, is provided with plastic runners disposed substantially tangentially to the wheels and terminating in curves at their lower ends in substantial alignment with the axis of said wheels, to act as skids in pulling said cart up or pushing it down steps.



3,684,308
TRAILER APPARATUS

Richard C. Steinke, Oregon City, Oreg., assignor to Idaho Parr, Inc.

Filed Aug. 27, 1970, Ser. No. 67,397
Int. Cl. B60p 1/00
U.S. Cl. 280—140 12 Claims

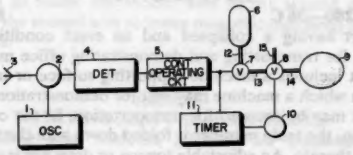


A trailer includes forward and rearward portions connected by an extensible reach and each having a pair of tiltable bunks mounted thereupon. The bunks carry a sectionalized flat bed comprising a pair of decks. In the absence of one or both of the decks, wooden roof trusses or the like can be carried on either side of the extensible reach.

3,684,309
INFLATABLE SAFETY DEVICE FOR VEHICLE PASSENGERS

Kameo Uchiyamada; Kazuo Sato, and Tomio Hisatsune, all of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Jan. 18, 1971, Ser. No. 107,113
Claims priority, application Japan, Jan. 24, 1970, 45/6558
Int. Cl. B60r 21/06
U.S. Cl. 280—150 AB 9 Claims

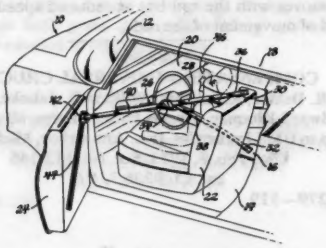


A safety device for vehicle passengers, of the type in which at least one air bag is inflated responsive to detection of an object in the vehicle path in advance of contact of the vehicle with the object, includes a source of fluid under pressure and a valve, operable responsive to detection of such an object, to connect the source to a line leading to at least one inflatable air bag. A valve mechanism is interposed in the line and normally connects the line to the air bag. An impact detector is operable to detect the force of an impact, and to provide an output signal when the force has less than a predetermined magnitude. Relay means are operable responsive to the output signal, to operate the valve mechanism to disconnect the line from the air bag to interrupt inflation of the air bag and to connect the air bag to atmosphere for deflation. A timer may be included to control the time of operation of the valve mechanism by the output signal of the impact detector.

3,684,310
VEHICLE PASSIVE OCCUPANT RESTRAINING BELT ARRANGEMENT

Willem J. J. Weststrate, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,606
Int. Cl. B60r 21/02
U.S. Cl. 280—150 SB 1 Claim



A vehicle passive occupant restraining belt arrangement includes a first belt having one end fixed to an upper inboard portion of a vehicle seat and the other end fixed adjacent a lower inboard portion of the seat, a ring member slidably receiving an intermediate portion of the first belt to define shoulder and lap belt portions, a second belt having one end attached to the ring member and the other end received by an inertia retractor slidably mounted on the vehicle body door for movement between an upper forward position and a lower rearward position, and a conventional drive mechanism for moving the retractor to the upper forward position and the belt arrangement to an easy-enter position during door opening movement and moving the retractor to the lower rearward position and the belt arrangement to an occupant restraining position during door closing movement.

3,684,311
MUDGUARD ATTACHMENT FOR AUTOMOBILES

Ray S. Pierce, 3821 Vineyard Road, Kansas City, Mo.

Filed Nov. 2, 1970, Ser. No. 85,863
Int. Cl. B62b 9/16
U.S. Cl. 280—152 R 3 Claims

A mudguard attachment for automobiles, the sides of the bodies of which curve transversely inwardly at their lower edge portion, said attachment comprising a step member resembling a running board adapted to be extended horizontally along the side of a car body at the lower edge thereof, being secured at its inner edge to said car body and extending

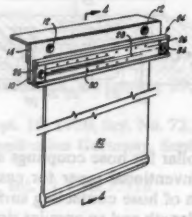
transversely outwardly beneath the inwardly curved portion of said car body, extending fore and aft between the wheel wells of said body, and a pair of flexible end plates each disposed transversely to the vehicle and secured at its lower edge to one end of said step member and extending upwardly into the associated wheel well.

3,684,312

MUD FLAP ASSEMBLY

James P. Evans, 3233 S.W. 23rd Street, Oklahoma City, Okla.

Filed Sept. 28, 1970, Ser. No. 75,922
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **7 Claims**



A mud flap assembly which includes a back plate adapted to be secured to a wheeled vehicle, the assembly further having a spacer plate secured to the center of the back plate to develop a bow or convex curvature in the back plate when it is affixed to the vehicle. A front plate is provided which is bolted at its opposite ends to the back plate, and is spaced therefrom to accommodate between the two plates, the upper end portion of a mud flap made of rubber or other elastomeric material. The front plate can be separated from the back plate so as to allow any thickness of mud flap to be frictionally retained between the plates. An elongated groove is preferably formed in the front plate for the purpose of enhancing the frictional engagement of the front plate with the mud flap. A plurality of apertures may be pressed out of the front plate to afford further frictional engagement with the mud flap.

3,684,313

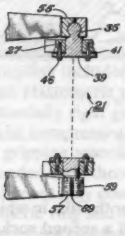
Patent Not Issued For This Number

3,684,314

ADJUSTABLE BALL PIN PIVOT

Lloyd A. Molby, Longview, Tex., assignor to R. G. Le Tourneau Inc., Longview, Tex.

Filed July 13, 1970, Ser. No. 54,396
Int. Cl. B62d *53/02*
U.S. Cl. 280—461 R **6 Claims**



A pivot connection for effecting axial alignment adjustment for the ball portion of a ball and socket pivot both to facilitate initial installation and to compensate for wear, characterized by a ball pin having a collet base portion including a bolt ring, a cylindrical shank, and a ball affixed at the other end thereof; a bore disposed in the part to which the ball pin is to be affixed, with a bolt ring surrounding the bore and mating with the bolt ring of the collet base portion; bolts for affixing the collet base portion to the bolt ring surrounding the bore; and a plurality of shims interposed between the bolt rings. A spherical socket for removably receiving said ball portion is characterized by a base portion that is permanently affixed to a second member; a cap portion that is removably affixed to the base portion; and a plurality of shims adapted to be interposed intermediate said cap portion and said base portion for adjusting bearing clearance initially and for compensating for wear. Also disclosed are specific embodiments in which the base portion has a hemispherically shaped, replaceable liner; and a bearing retainer is also disposed intermediate said cap portion and said base portion of the socket.

3,684,315

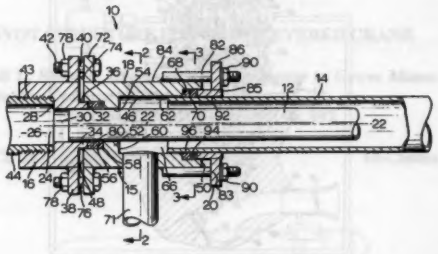
Patent Not Issued For This Number

3,684,316

ROTARY JOINT

William James Lavender, Edmonton, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Sept. 18, 1970, Ser. No. 73,410
Int. Cl. F16l *39/04*
U.S. Cl. 285—16 **3 Claims**



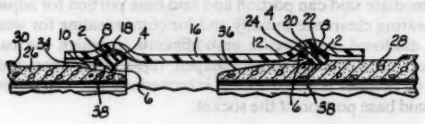
A rotary joint for transferring fluids from stationary pipes to rotating pipes. The joint has a non-rotatable housing with an elongated cylindrical opening within which rotate inner and outer concentric pipes. The pipes have open ends within the housing. The open end of the inner pipe projects beyond the open end of the outer pipe. A gland is mounted about the outer pipe and a second gland is mounted about the inner pipe beyond the end of the outer pipe. Both glands are within the housing and seal the pipes to the inside wall of the opening. The housing has two channels, one of which is located between the two glands and extending laterally of the opening outwardly for the discharge of liquid from the outer pipe and the other of which commencing at the free end of the inner pipe and extending longitudinally of the opening for the discharge of fluid from the inner pipe.

3,684,317

PIPE JOINT

Henry Joseph Kazienko, Somerville, and Walter Madison Palmer, Lawrenceville, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed April 20, 1970, Ser. No. 29,943
Int. Cl. F16l 17/02
U.S. Cl. 285—110 6 Claims



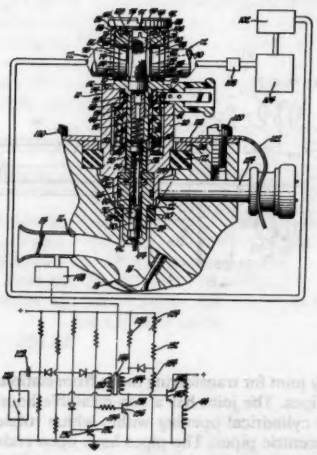
A pipe joint having an annular resilient gasket having a plurality of distinct portions separated by a plurality of recesses which cooperate with a pipe end and coupling member to provide good sealing characteristics with a minimum of assembly effort.

3,684,318

FUEL RAIL-INJECTOR INTERCONNECTION

Clarence J. Eckert, Rochester, and John W. Moulds, Penfield, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 22, 1970, Ser. No. 39,641
Int. Cl. F16l 41/00
U.S. Cl. 285—189 1 Claim



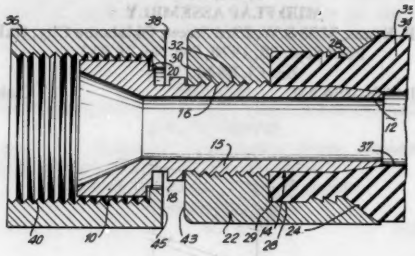
A solenoid operated fuel injector discharges into an internal combustion engine induction passage adjacent the combustion chamber intake port. Fuel is supplied to the injector through a tubular fuel rail which is received by and clamped in a recess at the top of the injector. A thermistor senses injector tip temperature and controls the duration of energization of the solenoid to compensate for a reduction in fuel delivery at high temperatures.

3,684,319

HOSE END COUPLING

Anthony John Samartina, Wallington, N.J., assignor to Tasco Engineering & Supply, Inc., Tenafly, N.J.

Filed May 27, 1970, Ser. No. 40,842
Int. Cl. F16l 21/08
U.S. Cl. 285—247 2 Claims



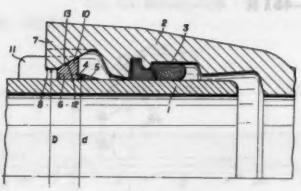
A nipple and collar for hose couplings are shown. The nipple includes a conventional taper for easing its entry into a hose end, a length of hose contacting surface adjacent to the taper, a threaded length and an annular ring having a diameter greater than the threads. The annular ring is positioned behind the threads and by abutting the collar limits the distance to which the threads can be advanced through the mating collar. The threads on the nipple do not contact the hose. The annular ring also controls and standardizes the gap between the collar and a swivel nut rotatably mounted on a platform at the rear of the nipple. It is preferably of sufficient diameter to abut the collar but small enough to allow the swivel nut to pass over it during assembly. The collar has annular ribs which grip the hose end and a female threaded length which mates with the thread on the nipple. The threaded length in the collar and the threaded length of the nipple are approximately the same. With hose end couplings as shown, the hose is not cut or damaged or weakened in any way, burrs or rubber particles are not kicked up, assembly and disassembly of the coupling is simplified and made more exact and tighter couplings are obtained than with conventional designs. The coupling may be of the permanent or reusable type.

3,684,320

PIPE JOINTS

Herbert Platzer; Erich Singer, and Frans Wassermann, all of Innsbruck, Austria, assignors to Tiroler Rohren-und Metallwerke Aktiengesellschaft, Solbad Hall/Tirol, Austria

Filed April 28, 1970, Ser. No. 32,514
Int. Cl. F16l 21/02
U.S. Cl. 285—81 6 Claims



A joint for pipes or the like in which each pipe section has a first narrow end and a second socket end adapted to receive the narrow end and the narrow end has external supporting elements circumferentially arranged on the exterior thereof while the socket end has at least one internally internally protruding projection circumferentially arranged on the in-

terior thereof arcuately adjacent the supporting elements. The relative diameters of the supporting elements and projections are arranged such that the projection can concentrically receive the supporting elements. Locking members are then inserted through recesses formed in the projections and slid circumferentially to lock the adjoining pipes to one another by abutting the projections and supporting elements, the mating surfaces of the projections and locking members being spherically formed to allow a certain angular displacement between adjoining pipe sections. Each joint between pipe sections also includes a sealing ring of elastomeric material which is mounted on the circumference of the narrow end in a position axially removed from projection and supporting elements. The sealing ring projects into a depression on the interior surface of socket end to seal the joint between the pipes.

3,684,321

COUPLING FOR TUBES

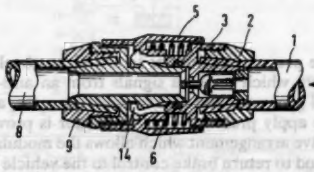
Eckhard Hundhausen, Margarethenstr. 21, 6242 Schonberg, and Karl-Heinz Hoffmann, Birkenweg 29, 5904 Elserfeld, both of Germany

Filed Sept. 15, 1970, Ser. No. 72,280

Claims priority, application Germany, Sept. 22, 1969, P 19 47 939.1

Int. Cl. F16l 37/18

U.S. Cl. 285—316 **11 Claims**



A hose coupling comprises a male part and a female part with collet-like fingers held by a sliding sleeve. Two sorts of fingers are provided: one sort for engaging the male part and another sort for acting on the sleeve.

3,684,322

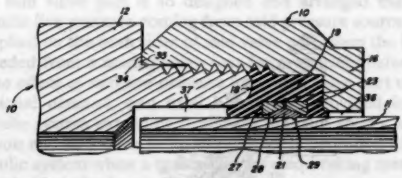
VIBRATION RESISTANT COUPLING

Mike D. Kotsakis, Des Plaines, Ill., assignor to Imperial-Eastman Corporation

Filed Sept. 11, 1970, Ser. No. 71,543

Int. Cl. F16l 19/08

U.S. Cl. 285—343 **21 Claims**



A vibration resistant coupling for use in coupling tubular ducts and the like. The coupling includes a seal structure including a ring formed of an elastomeric material. Within the elastomeric ring is a substantially rigid gripping element and means responsive to an axial compression of the ring to urge the gripping element into gripping association with the outer wall of a tubular duct extended therethrough. The means for constricting the gripping element may comprise wedge means disposed within the elastomeric ring and may include at least one wedge surface on the gripping element. The wedge means is arranged to effectively retain the gripping element in association with the tubular duct notwithstanding a lessening of the compressive force exerted on the gripping element by the elastomeric ring.

3,684,323

DEVICE FOR DETACHABLY CONNECTING WOODEN SLATS TO JUNCTION ELEMENT

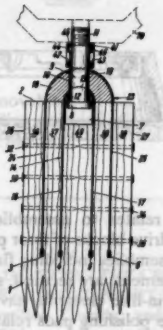
Walter Greim, deceased, late of Hildesheim, Germany; by Gunter Greim-Kuczewski, heir, Galgenfeldstrasse 47, 463 Bochum-Stiepel, Germany; Heinz Brunotte, deceased, late of Hildesheim, Germany, and by Helene Brunotte nee von Kap-Herr, heir, Grosse Venedig 8, 3200 Hildesheim, Germany

Filed April 23, 1971, Ser. No. 136,684

Claims priority, application Germany, April 25, 1970, P 20 20 242.0

Int. Cl. F16b 7/00

U.S. Cl. 287—20.92 F **10 Claims**



An improved device for detachably connecting wooden slats to junctions elements with at least one anchoring member comprising a threaded element, the threaded part of which extends substantially coaxially to the wooden slat and in extension thereof. The same device may be used for any cross-section and cross-sectional configuration of the wooden slat and secures the connection against accidental slackening and against torsional stresses. In particular, the invention relates to the end-face connection of wooden slats to junction elements.

3,684,324

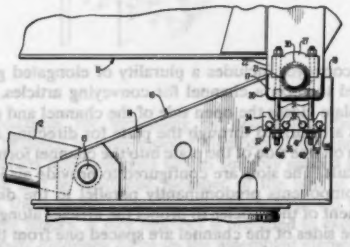
PIVOT STRUCTURE FOR CANTILEVERED CRANE BOOM

Russell L. Sterner, Greencastle, Pa., assignor to Grove Manufacturing Company, Shady Grove, Pa.

Filed Dec. 15, 1970, Ser. No. 98,392

Int. Cl. F16c 11/00

U.S. Cl. 287—100 **10 Claims**



The boom support of a mobile crane features a pivot structure which is capable of withstanding the heavy impact forces transmitted through the cantilevered boom. The improved pivot structure embodies journal blocks secured to side plates of the boom support and separable journal caps mountable upon the blocks when the main pivot shaft of the boom is in place. The heavy forces at the pivot tending to pull the journal

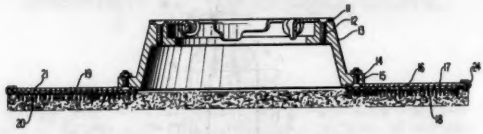
blocks from the boom support are resisted by long tension bolts whose inherent elasticity is utilized to absorb shock loads. The tension bolts are anchored to the side plates of the boom support by anchor blocks which are in turn secured by sturdy shear bolts.

3,684,325

PAD HOLDER FOR FLOOR POLISHING MACHINE

Nathaniel N. Okun, Baltimore, Md., assignor to The Cello Chemical Company, Baltimore, Md.

Filed Jan. 22, 1971, Ser. No. 108,899
Int. Cl. A47l *11/40*
U.S. Cl. 300—21 4 Claims



The invention relates to assemblies for attachment of polishing pads to drive blocks of floor polishing machines and hand tools, the assemblies including flattened metallic plates to which plastic elements are secured, said plastic element including integral pin-like elements having flattened ends for pre-positioning the polishing pads relative to the machine or hand tool, whichever the case may be.

3,684,326

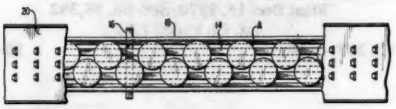
Patent Not Issued For This Number

3,684,327

APPARATUS FOR CONVEYING ARTICLES ALONG A PNEUMATIC CHANNEL

Stanley E. Hurd, 851 Russet Dr., Sunnyvale, Calif.

Filed Dec. 17, 1970, Ser. No. 99,224
Int. Cl. B65g *53/04*
U.S. Cl. 302—2 R 4 Claims



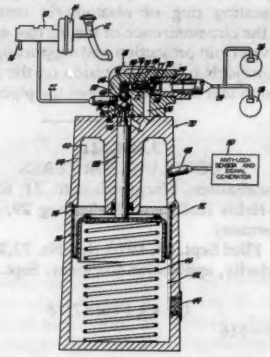
The conveyor includes a plurality of elongated guide rails disposed to form a channel for conveying articles. An elongated plate closes the open side of the channel and a plurality of slots are formed through the plate for directing air from a plenum on one side of the plate into the channel formed by the guide rails. The slots are configured to provide air jets having flow components predominantly parallel to the direction of movement of the articles to propel the articles along the channel. The sides of the channel are spaced one from the other a distance greater than the predetermined width of the articles being conveyed and less than a whole multiple thereof greater than one, whereby the articles are arranged in rows in the direction of movement with the articles in each row being spaced one from the other. Substantially the entirety of the propelling force normally applied to the articles is thus applied to the articles when accumulated whereby a rapid accumulation recovery rate is obtained.

3,684,328

BRAKE ANTI-LOCK MODULATOR WITH BYPASS VALVE

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1970, Ser. No. 65,025
Int. Cl. B60t *11/34*
U.S. Cl. 303—21 AF 4 Claims



A brake pressure modulator in a vehicle wheel brake anti-lock system which receives signals from an anti-lock sensor and signal generator and acts to limit, decrease, and increase the brake apply pressure. The modulator is provided with a bypass valve arrangement which allows the modulator valve to be bypassed to return brake control to the vehicle operator independently of the normal operating sequence of the modulator.

3,684,329

LOAD RESPONSIVE HYDRAULIC PRESSURE CONTROL MECHANISM OF AN AUTOMOTIVE VEHICLE

Tsuneo Kawabe, and Hiroshi Takeshita, both of c/o Aisin Seiki Company Limited of No. 1, 2-chome, Asahi-machi, Kariya, Japan

Continuation of Ser. No. 843,428, July 22, 1969, abandoned.
This application April 16, 1971, Ser. No. 134,835
Claims priority, application Japan, July 20, 1968, 43/51449
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R 7 Claims

In a load responsive brake pressure control mechanism for an automotive hydraulic brake system comprising a cylinder, a

differential hydraulic piston movably mounted therein, valve means adapted for on-off controlling the fluid communication between a first hydraulic chamber kept in permanent fluid communication with a master cylinder and a second hydraulic chamber kept in permanent fluid communication when a certain hydraulic pressure is applied onto said differential piston and a spring for urging said valve means towards its open position, the provision of spring means capable of modifying the spring force of said spring depending upon a variation in the distance between the vehicle chassis frame and the rear axle shaft.

3,684,330

HYDRAULIC BRAKE PRESSURE CONTROL VALVE ASSEMBLY

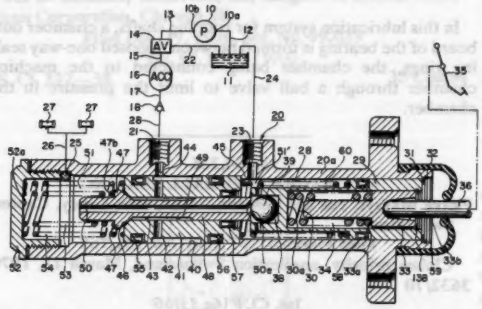
Masahiro Kito, c/o Aisin Seiki Kabushiki Kaisha 1 Asahi-Machi 2-chome, Kariya, Japan

Filed July 7, 1970, Ser. No. 52,901

Claims priority, application Japan, July 7, 1969, 44/53558; Dec. 9, 1969, 44/117473; Dec. 29, 1969, 44/123851; Dec. 29, 1969, 44/125852; Feb. 2, 1970, 45/10930

Int. Cl. B60t *15/06*

U.S. Cl. 303—54 **7 Claims**



A hydraulic pressure control valve assembly in a hydraulic brake system on a powered and wheeled vehicle having a self-contained hydraulic pressure source, preferably in the form of a pressure accumulator, said assembly being characterized by that the assembly is formed with a hydraulic pressure chamber and a slidable piston in the latter, an axial bore is formed through said piston, an elongated valve slide is slidably mounted in said axial bore, a valve part is formed on said valve slide, said valve part is so designed and arranged that the hydraulic live pressure coming from said pressure source may be applied on the both sides of said valve part when the latter is receded from a mating valve seat for practically balancing out the effect of said live pressure upon said valve part under occasional demand, said axial bore being provided in the hydraulic system extending from said pressure source and a reservoir and said valve being adapted for interruption of said hydraulic system when a manually operated braking member is actuated in its brake applying sense.

3,684,331

RAILWAY AXLE JOURNAL STOP

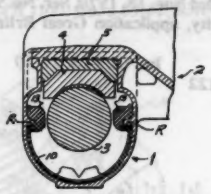
James J. Hennessy, Jr., Chambersburg, and Luther L. Bollinger, Sr., Reading, both of Pa., assignors to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Oct. 2, 1970, Ser. No. 77,426

Int. Cl. F16c *1/24*

U.S. Cl. 308—40 **3 Claims**

A railway axle journal stop structure comprising a flexible support strip with impact blocks of comparatively rigid material having apertures into which the support strip material is molded to form a unitary structure. Preferably the impact blocks are substantially shorter than the length of the journal which they oppose and the complete stop structure is readily



insertible into and removable from the journal box through its outer opening by folding portions of the flexible strip about the ends of the impact blocks.

3,684,332

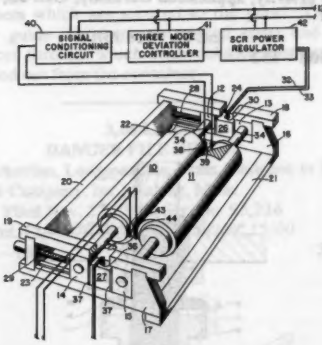
APPARATUS FOR ADJUSTING THE CENTER DISTANCE BETWEEN BEARING SUPPORT MEMBERS

John F. Benson, Hamilton County, and Daniel R. Shern, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed March 29, 1971, Ser. No. 128,751

Int. Cl. F16c *23/00, 35/00*

U.S. Cl. 308—60 **8 Claims**



An apparatus for increasing or decreasing the center distance between bearing support members. The bearing support members may comprise blocks suitably spaced and supported so that at least one member of the pair is slidably disposed, there being a spacing member interposed between the bearing blocks. A jack member is provided to exert a substantial static clamping force on the assembled elements. The spacing member is made of a thermally expansible or contractable material and preferably has an electric heater embedded therein. Control means are provided to energize or de-energize the heater thereby causing expansion or contraction of the spacing member to change the spacing between the bearing blocks. In a preferred use, the apparatus controls the nip distance between a pair of co-acting sheeting rolls.

3,684,333

HYDROSTATIC BEARINGS

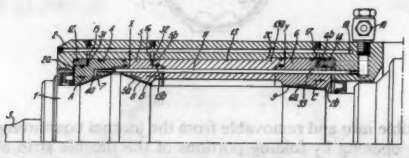
Alexander Flett, and Ronald John, both of London, England, assignors to Molins Machine Company Limited, London, England

Filed Nov. 18, 1970, Ser. No. 90,570

Claims priority, application Great Britain, Nov. 26, 1969, 57,741/69

Int. Cl. F16c *17/10*

U.S. Cl. 308—122 5 Claims



A fluid bearing, particularly a hydrostatic bearing, for supporting a rotatable shaft. The bearing surface on the shaft, and the complementary surface on the surrounding bearing member being frusto-conical. The bearing member being movable axially of the shaft to vary the fluid gap.

3,684,334

MOUNTING FOR SPINDLE BEARING HOUSINGS

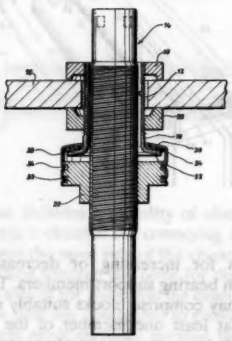
Gisbert Kohler, Stuttgart, Germany, assignor to SKF Kugellagerfabriken Gesellschaft mit beschrankter Haftung, Schweinfurt, Germany

Filed Oct. 16, 1970, Ser. No. 81,423

Claims priority, application Germany, Oct. 23, 1969, P 19 53 325.6

Int. Cl. F16c *35/08*

U.S. Cl. 308—152 9 Claims



A spindle bearing housing mounted by an arrangement comprising a carrier secured to the spindle bank and depending therefrom. The carrier is provided with an upwardly facing supporting member spaced below the spindle bank, on which rests a corresponding supporting member formed on a bearing housing holder. The bearing housing is secured within the holder and extends upwardly through the recess.

3,684,335

LUBRICATOR, PARTICULARLY FOR HYDRODYNAMIC BRAKES EVACUATED DURING IDLING

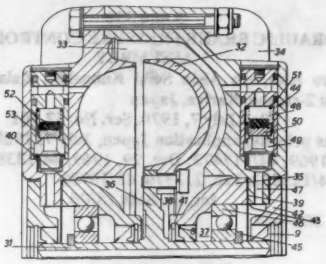
Kurt Franke, Bergen-Enkheim, and Hermann Steffen, Neu-Isenburg, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed July 29, 1970, Ser. No. 59,323

Claims priority, application Germany, July 30, 1969, P 19 38 598.9

Int. Cl. F16d *65/78*

U.S. Cl. 308—187 2 Claims



In this lubrication system for rotating shafts, a chamber outboard of the bearing is formed between opposed one-way sealing rings, the chamber being connected to the machine chamber through a ball valve to limit the pressure in the chamber.

3,684,336

MINIATURE TYPE BALL BEARING

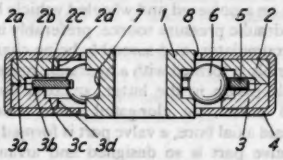
Pierre Mathys, rue des Bossons, 78-14, Petit-Lancy, Canton, Switzerland

Filed March 8, 1971, Ser. No. 121,759

Claims priority, application Switzerland, March 11, 1970, 3632/70

Int. Cl. F16c *33/60*

U.S. Cl. 308—196 7 Claims



Miniature type ball bearing having a first ball race path allotted on two rings, said rings engaging said balls by means of edges located on said rings, said edges forming said first ball race path, a second ball race path being formed of two edges located on a third ring of an embodiment, said bearing being produced without clearance or squeezing, said bearing being submitted to a polishing operation for adjusting clearance, with advantages resulting mainly in the economical and accurate production of miniature type ball bearings.

3,684,337

RETAINING CAGES FOR ROLLING ELEMENTS IN BEARINGS

Pietro Fransos, Via Saorgio 30, and Domenico Camosso, Via Gorizia 149, both of Turin, Italy

Filed Dec. 18, 1970, Ser. No. 99,564

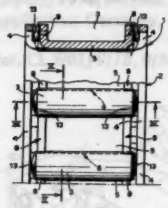
Claims priority, application Italy, Feb. 10, 1970, 67416 A/70; May 22, 1970, 68763 A/70

Int. Cl. F16c *33/46*

U.S. Cl. 308—217 20 Claims

A bearing cage is formed from a single piece of sheet metal with a number of windows adapted to retain respective rolling

elements against movement in the sense of the bearing load. The cage is formed integrally with a number of pairs of wings folded towards the rolling elements so as to retain them in the respective windows in a sense opposite that of the normal



bearing load, so that the rolling elements, located in the windows by spring action, are trapped therein. The construction is described for bearings of both the radially loaded and axially loaded type.

3,684,338

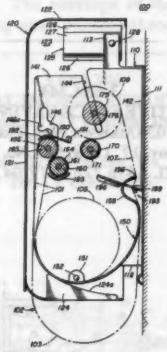
COMPACT TOWEL DISPENSER

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Chicago, Ill.

Filed Dec. 17, 1970, Ser. No. 99,039

Int. Cl. B65h *19/00*

U.S. Cl. 312—38 **33 Claims**



A continuous towel dispenser comprises dispensing apparatus including a measuring roll for feeding a loop of towel from a clean towel supply in a housing to a use position outside of the housing and thence along a return path back into the housing, take-up means in the housing for retracting soiled towel from the return path, and a roll stop assembly including a disc-like cam having a spiral cam surface and a transverse groove thereon and being rotatable with the measuring roll, a cam follower engageable with and movable by the spiral cam surface transversely thereof from a variable starting position to a stopping position in the transverse groove, and a stop surface rotatable with the cam and engageable with a stop dog on the cam follower when the cam follower is in its stopping position for thereby halting rotation of the measuring roll, the cam follower being returnable along the transverse groove to the starting position, at which point the stop dog engages an adjustable retainer which defines the variable starting positions; the roll stop assembly is of relatively flat compact construction to minimize the size of the dispenser. There is also provided novel towel breaker structure and cam means for moving in into operative position along closing of the housing.

3,684,339

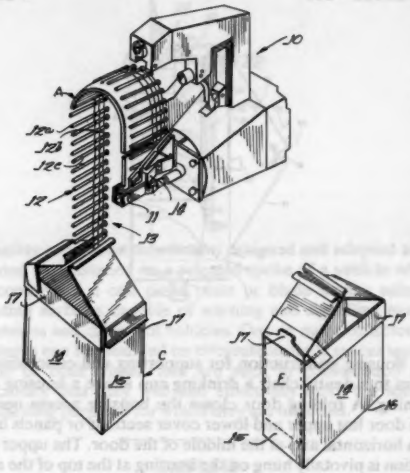
PACKAGE FOR COLLATED ELEMENTS AND A GUIDE ATTACHMENT THEREFOR

Garry R. Perkins, and James K. Goode, Jr., both of Cary, Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed July 20, 1970, Ser. No. 56,419

Int. Cl. A47f *1/00*; B65d *83/02, 83/04*

U.S. Cl. 312—73 **6 Claims**



A device is provided which is adapted to facilitate feed out of elongated collated elements from a container. The device is adapted to be removably mounted on the open end of the container and is provided with an elongated panel which is inserted between one side wall of the container and the ends of the collated elements. Overlying the open top of the container and extending convergently upwardly therefrom is a pair of guide members which are secured to the panel. The upper ends of the guide members are spaced apart and form a discharge port through which each collated element passes upon being fed out from the container.

3,684,340

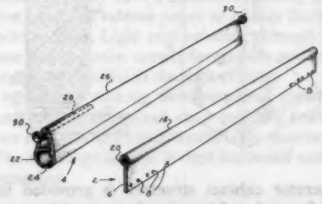
HANGER FILE DEVICE

Albert P. Kirkorian, Longmeadow, Mass., assignor to National Bank Book Company, Inc., Halyke, Mass.

Filed Nov. 27, 1970, Ser. No. 93,216

Int. Cl. A47b *63/00*; B42f *17/00, 15/00*

U.S. Cl. 312—183 **3 Claims**



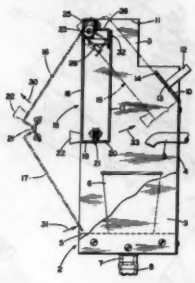
Hanger filling device, particularly for loose leaf post binder assemblies, having an elongated flat strip for mounting together with the contents of a binder and extension from the back of the bound edges thereof. An enlarged outer marginal portion of the strip, preferably formed as a cylindrical beaded edge, is slidably and releasably engageable in a slotted tubular holding passage of a hanger strip member provided with end edge hanger extensions engageable to suspend the device on the rail members of a hanger file unit or the like.

3,684,341

FOLD-AWAY COVER FOR DENTAL DRINKING CUP SUPPORT

Dean H. Buchtel, and John A. Maurer, both of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio

Filed Sept. 8, 1970, Ser. No. 70,428
Int. Cl. H47b 81/00; A61b 19/02; E05d 15/00
U.S. Cl. 312—209 4 Claims



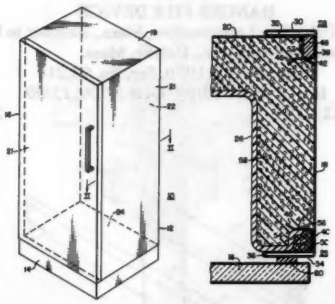
A housing construction for supporting and concealing adjacent to a dental chair a drinking cup above a housing drain opening. A folding door closes the housing access opening. The door has upper and lower cover sections or panels hinged on a horizontal axis at the middle of the door. The upper panel section is pivotally hung on the housing at the top of the access opening so that the panel sections may be folded together and swung into the housing to permit access to the drinking cup. Releasable magnet means hold the panels in folded, as well as in swung cup-exposing positions, when the door is open.

3,684,342

REFRIGERATOR CABINET STRUCTURE

Robert A. Jansen, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1970, Ser. No. 68,224
Int. Cl. A47b 81/00; F25b 11/00
U.S. Cl. 312—214 7 Claims



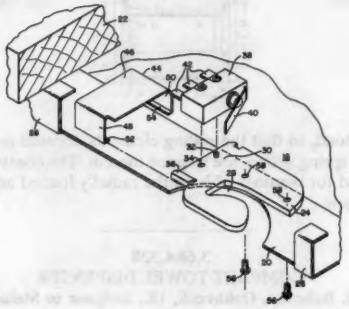
A refrigerator cabinet structure is provided in which a closed-cell foamed seal is utilized as a seal between the rear panel and outer wrapper of the refrigerator cabinet at the rear and an open-cell foamed seal is utilized between the outer wrapper and inner liner at the front of the refrigerator cabinet. The space between the inner liner, outer wrapper and rear panel is then filled with a conventional foamed plastic insulating material with the open cell foam seal at the front of the refrigerator cabinet permitting the escape of air as the foamed plastic expands into the space between the outer wrapper, inner liner and rear panel.

3,684,343

LATCH SWITCH ARRANGEMENT FOR DISHWASHER

Charlie L. Hancock, Grove City, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1971, Ser. No. 140,529
Int. Cl. E05c 7/06
U.S. Cl. 312—223 7 Claims



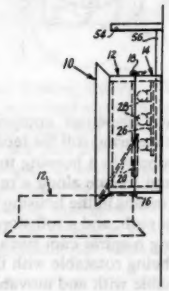
A latch strike, switch and cover for the switch form an assembly in which the parts interfit with each other with the entire assembly being mounted on the top wall of the tub in a fashion which permits the assembly to be removed without pulling the dishwasher tub out from underneath the counter top.

3,684,344

DECORATIVE SPACE-SAVING VANITY

Jean A. Gilinger, 6703 Oaklawn Way, Fair Oaks, Calif.

Filed Nov. 17, 1969, Ser. No. 877,150
Int. Cl. A47b 77/08, 17/04, 67/02
U.S. Cl. 312—223 1 Claim



A casing is provided with front and back sections, the latter of which is adapted to be fixed to a wall while the front section is hinged at the bottom thereof to the bottom of the back section to swing downwardly to a horizontal position to form a vanity table. The front of the back section is provided with a mirror, exposed with the front section in lower position, and the mirror is provided at the sides thereof with soft light bulbs recessed into the back section and adapted to be illuminated when the front section is in its lower position.

3,684,345

METHOD FOR MAKING A TUBE

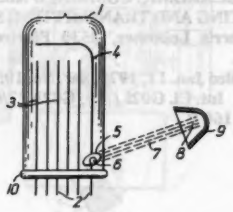
Manfred Schickel, and Hubert Reder, both of Ulm Danube, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed July 22, 1970, Ser. No. 57,107

Claims priority, application Germany, July 22, 1969, P 19 37 189.2

Int. Cl. H01j 9/18, 9/38

U.S. Cl. 316—4 4 Claims



A gas-filled discharge tube is fabricated by mounting a plurality of electrodes in an envelope, inserting an ampul containing mercury and fabricated of a material which strongly absorbs infrared radiation and has a low melting point into the envelope, evacuating the envelope, filling the evacuated envelope with a filler gas, forming the electrodes to obtain uniform surfaces and a low work function, vacuum filling the sealed envelope, and applying infrared radiation through the sealed envelope so that it is absorbed by the ampul and the mercury is released. The envelope of the tube is preferably made of a glass having weak infrared absorbing properties.

3,684,346

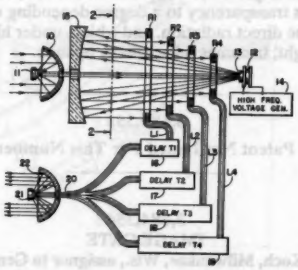
OPTICAL INTEGRATING SYSTEM

Paul Wentworth Lang, 31717 Foxfield Dr., Westlake Village, Calif.

Filed Nov. 27, 1970, Ser. No. 93,150

Int. Cl. G02b 5/16

U.S. Cl. 350—96 B 1 Claim



A system of integrating light over a given time period includes the directing of the light successively to a plurality of light receiving areas during the given time period in a given sequence. Light portions from the respective receiving areas are conducted to a common termination area. Optical delay means are provided to delay the conducted light portions by different amounts in such a manner that the portions arrive at the termination area substantially simultaneously so that an integrated light pulse of greater intensity than the original light results. The sequence of operations may be repeated at a high frequency to provide a series of high intensity light pulses.

3,684,347

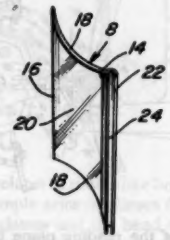
WHEEL SPOKE MOUNTED REFLECTOR

Henry W. Challe, and Kathleen M. Challe, both of 1764 Chestnut, Redding, Calif.

Filed Jan. 29, 1971, Ser. No. 111,028

Int. Cl. G02b 5/12

U.S. Cl. 350—97 6 Claims



A safety promotion attachment designed and adapted to be mounted and fastened on a selected spoke of a vehicle wheel and comprising a one piece plate or blade having suitable reflecting surfaces capable of warning and signalling nearby pedestrians and drivers of vehicles. One or more reflector attachments can be mounted on circumferentially spaces spokes of one or both wheels and are such in construction and adaptability that they well and effectively serve the special safeguarding purposes for which they are intended.

3,684,348

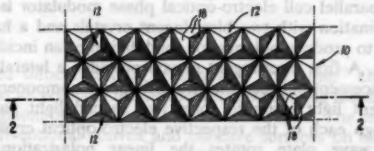
RETROREFLECTIVE MATERIAL

William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.

Filed Sept. 29, 1970, Ser. No. 76,551

Int. Cl. G02b 5/12

U.S. Cl. 350—103 16 Claims



Retroreflective material is provided by a composite synthetic plastic structure having a body portion with one smooth surface and another surface from which project a multiplicity of separately formed, minute cube corner formations having a side edge dimension of less than 0.025 inch. The cube corner formations may have a reflective coating thereon, and an adhesive layer and release paper to permit facile mounting on a support surface. Light rays entering through the smooth surface pass into the cube corner formations and are reflected back substantially parallel to the path of entry.

In the method of making the composite material, a fluid molding material is deposited on a molding surface having cube corner recesses and a preformed body member is applied thereto. The molding material is then hardened and bonded to the body member.

3,684,349

ANTI-PARALLAX INDEX

Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Company, Belvidere, Ill.

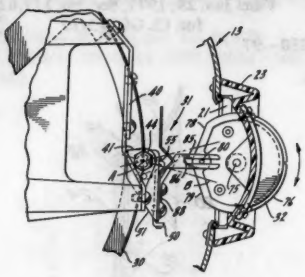
Filed Aug. 13, 1970, Ser. No. 63,540

Int. Cl. G02b 27/02

U.S. Cl. 350—110 6 Claims

An anti-parallax index for a cylinder scale or the like wherein an index band lying in a reading plane is mounted for

movement about an index axis lying in the plane of the cylinder chart. The band is displaced from the axis so that pivotal movement of the band about the index axis varies the



angular relationship of the reading plane to the scale chart while maintaining the zero reference line of the chart in the reading plane.

3,684,350

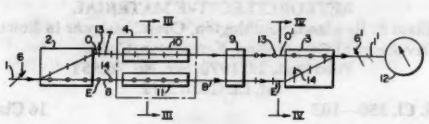
LIGHT BEAM POLARIZATION MODULATOR

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,382

Int. Cl. G02f 1/26

U.S. Cl. 350—150 **5 Claims**



A parallel cell electro-optical phase modulator is used in combination with two birefringent crystals and a half wave plate to produce polarization modulation of an incident light beam. A first birefringent crystal provides a lateral relative displacement between the two orthogonal components of the incident light beam to form two spaced light paths, one through each of the respective electro-optical crystals. The half wave plate rotates the linear polarization of the orthogonal components to allow a second birefringent crystal to recombine the orthogonal components into a single light beam.

3,684,351

A FERROELECTRIC-FERROELASTIC ELECTRICALLY OPERATED OPTICAL SHUTTER DEVICE

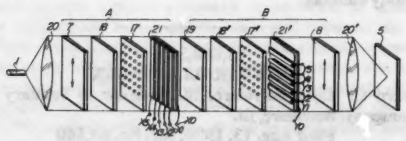
Akio Kumada, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1970, Ser. No. 15,134

Claims priority, application Japan, March 10, 1969, 44/18168

Int. Cl. G02f 1/26

U.S. Cl. 350—150 **4 Claims**



An optical shutter or an optical pattern generator, such as a page composer in a laser holographic memory, as an application thereof, comprising a pair of polarizers, and a quarter wave plate [$2n + 1/4$ wave plate] and optical shutter crystal both disposed between said pair of polarizers. This optical shutter crystal is made of a ferroelectric-ferroelastic crystal having z-cut end faces the distance between which is arranged to be $(2n + 1/4\lambda$, one z-plane being provided with a plurality of mutually parallel transparent electrodes, the other Z-plane being provided with a uniform transparent electrode, so as to apply an electric field at least equal to the coercive electric field of the crystal.

3,684,352

RADIOCHROMIC COMBINED ABSORBING REFLECTING AND TRANSMITTING STRUCTURE

Sergius N. Ferris Luboshez, 3530 Pinetree Terrace, Falls Church, Va.

Filed Jan. 11, 1971, Ser. No. 105,366

Int. Cl. G02f 1/36; G02b 27/00

U.S. Cl. 350—160 P **14 Claims**

The shade is a combined heat reflecting, light transmitting, absorbing, and thermal insulating shade which is contoured in a regular repetitive geometric pattern such that one face of the shade can be exposed to the sun, in a manner to position certain areas so that they become show areas which receive direct solar radiations, and to position contiguous areas relative to the show areas so that they become underlay areas which are shaded by the adjacent show areas and receive only indirect solar radiations.

The shade is normally transparent photo-chromic material which, when subjected to direct solar radiation, changes color and loses its transparency to a degree depending upon the intensity of the direct radiation, and which, under high intensity direct sunlight, becomes substantially opaque.

3,684,353

Patent Not Issued For This Number

3,684,354

IMAGE GATE

Rochne E. Koch, Milwaukee, Wis., assignor to General Electric Company

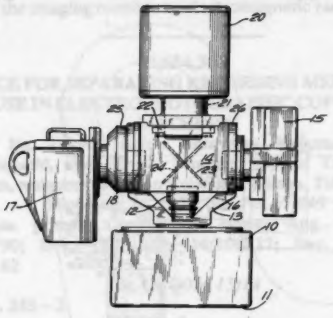
Filed Oct. 30, 1970, Ser. No. 85,654

Int. Cl. G02b 27/14

U.S. Cl. 350—289 **12 Claims**

An image gate is used for selectively directing the optical image from an X-ray image intensifier tube to cameras located on the sides of and in line with the optical image path. The image gate has semitransparent mirrors which park substantially upright in juxtaposition to the optical path. Either mirror may be shifted to a diagonal position in the beam path so as to transmit an image in one direction and reflect an image in another. A quick acting damping mechanism shifts each mirror on a combination of straight guide rods and guide tracks which have curved and straight portions. The mirror portion

near the camera lens first follows a hyperbolic arc around the camera lens to obtain the desired diagonal position and is then shifted sideways to clear the lens with a minimum space



requirement. Means are provided to lock the mirrors in their parked position so that the image gate may be used in various positions without danger of the mirrors shifting when not engaged by the drive mechanism.

3,684,355

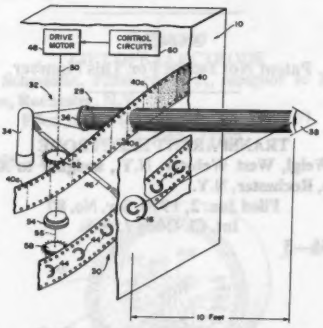
GLARE SUSCEPTIBILITY TESTER

Stanley F. Molner, Cambridge, Mass., assignor to Biometrics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 805,541, March 10, 1969, abandoned. This application July 2, 1970, Ser. No. 51,826

Int. Cl. A61b *3/06*

U.S. Cl. 351—36 **9 Claims**



A method and apparatus for testing the glare susceptibility of a subject. The technique includes presentation of a glare source and a target to the subject's view and then varying the relative intensity of light emitted by the glare source and target to determine the subject's susceptibility to glare. In each of the testing devices disclosed herein, means are provided for varying the target image to present a different, indentifiable target to the subject. The relative intensity of glare in relation to the intensity of the target illumination may be controlled by varying the intensity of the target while maintaining the glare intensity constant, varying the glare intensity while maintaining the intensity of the target or a combination of both.

3,684,356

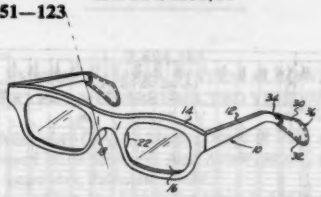
TEMPLE BOOTS

Howard E. Bates, 17135 Rockdale, Detroit, Mich.

Filed April 9, 1970, Ser. No. 26,833

Int. Cl. G02c *5/14*

U.S. Cl. 351—123 **1 Claim**



This invention relates to rubberlike boots that are applied to the ends of the temple arms of glasses for increasing the friction between eyeglasses and the head of the wearer thereby maintaining the position of the eyeglases on the wearer without slippage.

3,684,357

FUSED BIFOCAL CONTACT LENS UNIT

George F. Tsuetaki, 445 Wellington, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,683

Int. Cl. G02c *7/04, 7/06*

U.S. Cl. 351—161 **7 Claims**

A fused bifocal contact lens having "no jump" characteristics at all points of the segment line separating the distant vision segment of zone from the near vision zone. The lens include conventional convex and concave surfaces on the exterior portions, but, by reason of the construction of the bifocal segment, the wearer does not experience double vision when his line of sight crosses the segment line and the wearer does not notice the presence of the bifocal segment when not looking therethrough. In one form, a full, concentric bifocal segment is provided, and in another form, a lens is provided in which the bifocal segment is of a bi-curve form, lies principally in the lower portion of the lens and is defined by an upper, outer curve and an inner curve forming a partially circular segment line across which there is no jump. Methods of forming such lenses, including the method of forming the near vision segment, forming a composite blank including both distant and near vision segments, and forming a bifocal lens from the composite blank, are described.

3,684,358

APPARATUS FOR CONTROLLING THEATER OR AUDITORIUM FUNCTIONS

Angelo Boudouris, Sylvania, and Stanley J. Kulish, Jr., Holland, both of Ohio, assignors to Eprad Incorporated, Toledo, Ohio

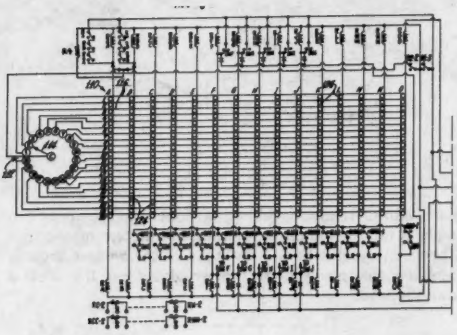
Filed April 13, 1970, Ser. No. 27,512

Int. Cl. G03b *21/50, 29/00;* **H01h** *43/06*

U.S. Cl. 352—25 **4 Claims**

A control system is provided for controlling functions of a theater or auditorium in coordination with the projection of a film. The system includes a selection board and a scanning

device enabling a large number of functions in the theater to be controlled in conjunction with the projection of film at preselected times. Such functions include masking arrangements for the screen, lights, non-synchronous sound, and



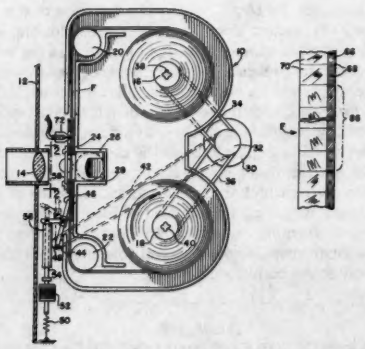
signals, as well as initiating and stopping operation of the projectors. The system also can be used to control theater functions and projectors over a lengthy period of time such as an entire day, if desired, rather than for just one show.

3,684,359

METHOD AND APPARATUS FOR EDITING MOTION PICTURE FILM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 17, 1970, Ser. No. 55,736
Int. Cl. G01b *21/48, 21/50*
U.S. Cl. 352—38 **17 Claims**



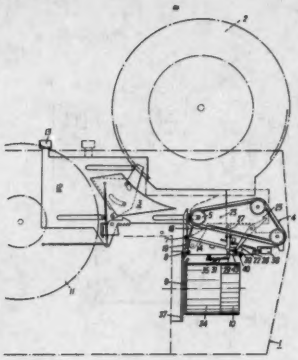
A motion picture film editing method and apparatus by which film portions to be deleted during presentation by projection are indicated by signals recorded on the film. The signals function to control film advance speed so that the deleted portions of the film are fed at high speeds past the projector light path. Also the light path is blocked during passage of the deleted film portions therethrough.

3,684,360

INFORMATION-PROCESSING APPARATUS

Gottfried Pammer, Sudstadt, Austria, assignor to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed June 24, 1970, Ser. No. 49,234
Int. Cl. B65h *59/26;* **G03h** *1/56*
U.S. Cl. 352—124 **5 Claims**



Means are provided which are adapted to guide a portion of an information carrier consisting of a strip in the form of a loop. A sensing device is movable along a predetermined path into and out of engagement with said portion of said strip. Mode control means are operable to set the apparatus for any of a plurality of modes of operation. One of said modes is a fast rewind mode. Locking means are movable between an inoperative position, in which they are clear of said path, and an operative position, in which they extend into said path and are adapted to hold said sensing device clear of said strip. Means are arranged to more said locking means to and hold them in said operative position in response to the setting of the apparatus for said fast rewind mode and to move said locking means to and hold them in said inoperative position in response to the setting of the apparatus for another of said modes.

3,684,361

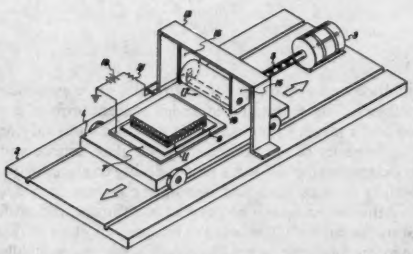
Patent Not Issued For This Number

3,684,362

TRANSPARENT ELECTRODE

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 87
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **15 Claims**



An apparatus particularly useful for the production of copies in electrophotographic imaging processes comprising a

rotatable cylinder, transparent to electromagnetic radiation, having an electrically conductive transparent coating thereon and having therein a source of electromagnetic radiation. The electrically conductive coating is covered with an electrically insulating coating. The device provides simultaneous application of an electric field across an imaging member and exposure of the imaging member to electromagnetic radiation.

3,684,363

DEVICE FOR SEPARATING RECORDING MEDIUM FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINES

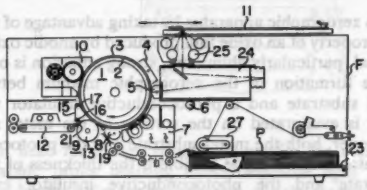
Yoshio Ito, Tokyo; Hajime Katayama, Kawasaki; Masaru Yamaguchi, and Hiroshi Nitanda, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,049

Claims priority, application Japan, Aug. 30, 1969, 44/68790; Dec. 12, 1969, 44/100217; Dec. 12, 1969, 44/26162

Int. Cl. G03g *15/14*

U.S. Cl. 355—3 **8 Claims**



A separating device for an electrophotographic copying machine consisting of a stationary or running belt and guide members for the belt. The belt extends through the nip between the photosensitive drum and the transfer roller of the copying machine. After the recording medium passes between the drum and the transfer roller, the medium is separated from the drum by the belt and subsequently separated from the belt by at least one of the guide members.

3,684,364

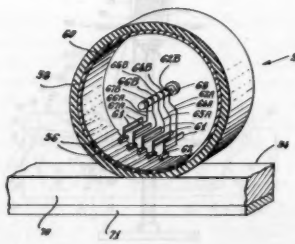
LIFT OFF ELECTRODE

Fred W. Schmidlin, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 24, 1971, Ser. No. 156,257

Int. Cl. G03g *15/02*

U.S. Cl. 355—3 **11 Claims**



The problem of electric breakdown in air at the initial and final contact points of a roller electrode with a reproductive surface is solved by providing a graded potential to the roller electrode over the area of contact. By selecting appropriate low level potentials for the initial and final contact points, air breakdown is avoided. The graded potential can be provided to the roller by means of a plurality of sliding contacts and resistively interconnected electrodes arranged about the circumference of the roller extending sufficiently through the roller to provide the requisite field to the reproducing surface beneath.

3,684,365

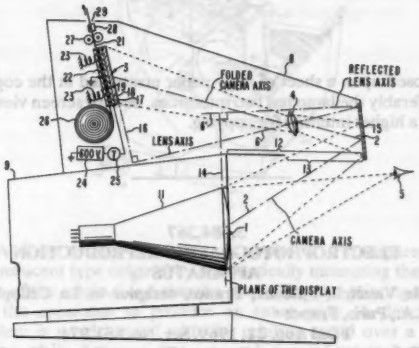
DISPLAY TUBE CAMERA SYSTEM ALLOWING AN OBSERVER AN UNOBSTRUCTED VIEW OF THE DISPLAY

John A. Dahlquist; Guy A. Marlor, both of Palo Alto, Calif., and Richard M. Whitehorn, Ann Arbor, Mich., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 804,559, March 5, 1969, abandoned. This application July 8, 1971, Ser. No. 160,939

Int. Cl. G03b *27/68*

U.S. Cl. 355—3 **1 Claim**



A display camera for taking sequential exposures of objects appearing on the face of a cathode-ray tube is disclosed. The camera is secured to the cathode-ray tube and positioned such that a mirror in the camera reflects an optical image of the objects on the face of the cathode-ray tube to a camera plate. The optical axis of the mirror intersects the plane of the cathode-ray tube display at an oblique angle to permit an observer an unobstructed front view of the display. A wise angle lens is disposed on the optical axis of the mirror for focusing the display objects onto the camera plate. The wide angle lens is disposed with its optical axis substantially displaced from the optical axis of the mirror and with its optical axis substantially perpendicular to both the plane of the display object and the plane of the camera plate, as such optical axis may be reflected via the mirror, whereby distortion of the optical image at the camera plate is avoided.

3,684,366

MACHINE FOR MAKING PRINTS FROM MICROFILM FICHE

Henry C. Hollwedel, Jr., Belmont, Calif., assignor to George Lithograph Company, San Francisco, Calif.

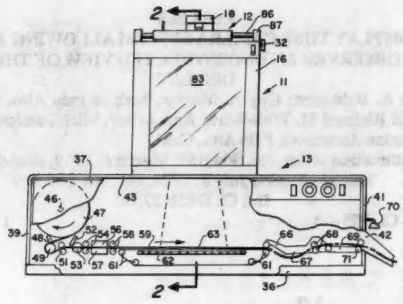
Filed Sept. 8, 1970, Ser. No. 70,070

Int. Cl. G03g *15/00*

U.S. Cl. 355—5 **9 Claims**

A holder for a microfiche jacket is mounted on top of a viewer, a lamp directing light through the microfiche and a lens onto a pivoted mirror and thence to a ground-glass viewing screen. A support frame for the holder enables any one microfiche to be accurately centered on the lends axis, as is determined by viewing on the screen. When the mirror is

pivoted out of the way, the enlarged image of the microfiche is exposed through the open top of an electrostatic copier. The image previously viewed on the screen is exactly the same as is



exposed upon a sheet of copy paper positioned in the copier. Preferably the lamp has two intensities, one for screen viewing and a higher intensity for copying.

3,684,367

ELECTROPHOTOGRAPHIC REPRODUCTION APPARATUS

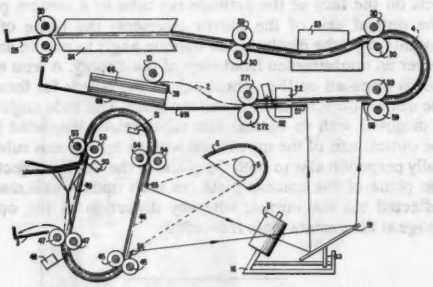
Pavle Vassitch, Puteaux, France, assignor to La Cellophane S.A., Paris, France

Filed Aug. 21, 1969, Ser. No. 851,971

Claims priority, application France, Sept. 25, 1968, 68167497

Int. Cl. G03g *15/00*

U.S. Cl. 355—11 **8 Claims**



Disclosed herein is an electrophotographic reproduction apparatus including a novel copy sheet feeding arrangement, and a novel structure for effecting the automatic return of the original to permit production of a number of copies without the necessity of handling the original for each copy. The copy sheet feeding arrangement includes a drive roller mounted on lever arms with the shaft of the roller resting on pivoted supports and the supports permit the roller to selectively contact the copy sheet ream. The automatic return structure includes a cam which is rotated to selectively control power to an electromagnetic switching unit that controls the automatic feed of the original back through the copy machine for the desired number of copies.

3,684,368

XEROGRAPHIC APPARATUS

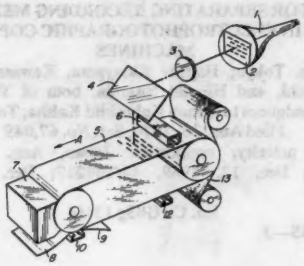
Kiyohiko Tanno, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,296

Claims priority, application Japan, July 10, 1968, 43/47762

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 **5 Claims**



In a xerographic apparatus by taking advantage of the adhesive property of an oxide film produced by anodic oxidation of a metal, particularly aluminum, strong adhesion is obtainable in the formation of the xerographic medium between the metal substrate and a photoconductive insulator when the latter is evaporated on the surface of the metal substrate. Moreover, both the metal substrate and the photoconductive insulator may be made flexible if the thickness of the metal substrate and the photoconductive insulator evaporated thereon is made sufficiently thin.

3,684,369

Patent Not Issued For This Number

3,684,370

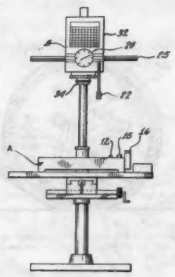
ENLARGING DEVICE FOR DIRECT-VISION THREE-DIMENSIONAL PICTURES

Law Chi Yin, Tokyo, Japan, assignor to Asahi Stereorama Co. Ltd., Tokyo, Japan

Filed Feb. 3, 1970, Ser. No. 8,274

Int. Cl. G03b *27/58*

U.S. Cl. 355—71 **5 Claims**

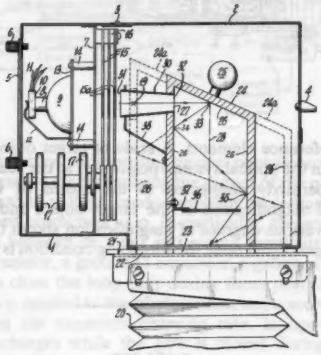


Enlarging device for direct-vision three-dimensional pictures, including an enlarger head incoporating an accurately positionable film carrier and an easel, with a device for mounting a photographic film, a lenticular screen positioned thereover, and a mechanism for moving the screen in increments relative to the film.

3,684,371
LIGHT HEAD WITH INTERCHANGEABLE MIXING CHAMBERS FOR HIGH SPEED ENLARGER

Louis I. Weisglass, New York, N.Y., and Robert A. Flieder, Englewood Cliffs, N.J., assignors to Berkey Photo, Inc., New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,407
Int. Cl. G03b 27/76
U.S. Cl. 355—71 6 Claims

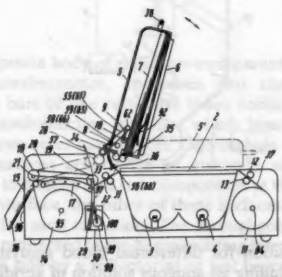


A light head for a high speed enlarger for the making of photographic prints utilizing interchangeable light mixing chambers for the efficient transmission of light through negatives of various sizes. Light mixing chambers of economical construction are provided including several types of light directing means for the light inlets to restrict light losses to a minimum with attendant increase in speed of print production.

3,684,372
COPYING MACHINE

Walter Limberger, Hamburg-Poppenbuttel, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany

Filed Aug. 21, 1970, Ser. No. 65,922
Claims priority, application Germany, Aug. 23, 1969, P 19 42 931.3
Int. Cl. G03b 27/30
U.S. Cl. 355—100 11 Claims

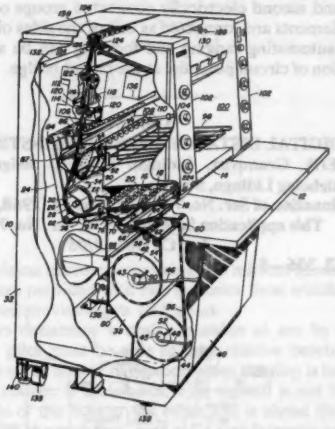


An improved copying machine for processing light-desensitizable transfer material and heat sensitive receiving material, comprising an exposure plate with a contact pressure cover, a heating device and a storage and take-up reel each for the band shaped transfer material. The effect of the heat of the heating device on the assembly of sheets comprising transfer and receiving material may be reduced or interrupted downstream of the matter to be transferred.

3,684,373
CONTACT PRINTING APPARATUS

Ralph I. Berge, 108 Leroy St., Binghamton, N.Y.; James L. Young, 340 Doyleson Ave., Endwell, N.Y., and Arnold G. Ulmer, 1008 Hazel Ave., West Corners, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,221
Int. Cl. G03b 27/10
U.S. Cl. 355—111 2 Claims

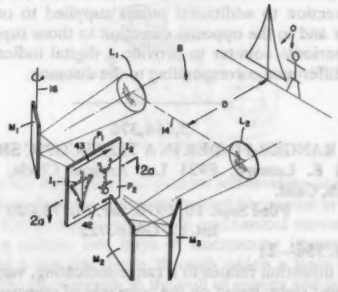


A diazo printer which makes copies of a transparent or translucent type original by automatically measuring the density of the original and thereby controlling the printing speed of the apparatus to produce an exact copy. A developer system is synchronized with the printing speed over a wide range of the latter so that any such type of original can be copied by the apparatus. The width of the copy, as well as the length thereof, match that of the original by a copy control circuit that also operates a supply roll feed mechanism of preselected width corresponding to the width of the original. A vertical cabinet houses the various parts of the apparatus so that they are easily accessible for serving and/or replacement.

3,684,374
FOCUS DETECTOR

William E. Humphrey, Oakland, Calif., assignor to Humphrey Research Associates, Oakland, Calif.

Filed July 29, 1970, Ser. No. 59,222
Int. Cl. G01c 3/08
U.S. Cl. 356—4 15 Claims



Correspondingly located portions of images projected on separate planes are compared for coincidence by correspondingly located photosensitive elements on each of the

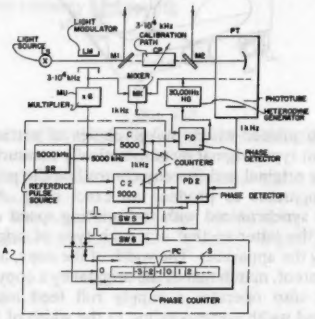
planes. The photosensitive elements on each corresponding image location on each plane are connected in separate circuits. An electrical potential is applied across these separate circuits. This produces a first aggregate current flow at image coincidence and a second easily distinguishable aggregate current flow at image non-coincidence. By the expedient of offsetting first and second electrically connected groups of the corresponding photosensitive elements on each plane in opposing directions and isolating the aggregate current flow of these groups, the amount and direction of image displacement can be determined in a base leg optical device. When these first and second electrically connected groups of photosensitive elements are connected as one of the sides of a bridge circuit, automating ranging and focusing can be achieved as a function of circuit potential at the circuit bridge.

3,684,375

DIGITAL DISTANCE MEASURING INSTRUMENT

Carl-Erik Granqvist, Lidingo, Sweden, assignor to AGA Aktiebolag Lidingo, Sweden

Continuation of Ser. No. 783,910, Dec. 16, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,206
Int. Cl. G01c 3/08
U.S. Cl. 356—5 2 Claims



A distance measuring instrument comprising a high-frequency reference source for emitting a modulated light signal and from which a first and second oscillation of 1 kHz is derived in a first and a second periodic counter, respectively. A phase control means locks the phase of the emitted signal to the first oscillation. A heterodyne frequency representing the transmitter phase is applied to transpose the received signal down to 1 kHz and a second phase detector compares the phase of this signal with the second oscillation and causes additional pulses to be supplied to the first or the second counter depending on the polarity of the phase difference so as to reduce it to zero. A forward-backward counter responds in one direction to additional pulses supplied to one periodic counter and to the opposite direction to those supplied to the other periodic counter to provide a digital indication of the phase difference corresponding to the distance.

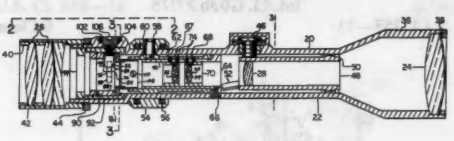
3,684,376

RANGER-FINDER IN A TELESCOPIC SIGHT

Donald E. Lessard, 6921 Los Amigos Circle, Huntington Beach, Calif.

Filed Sept. 10, 1970, Ser. No. 71,020
Int. Cl. G01c 3/22
U.S. Cl. 356—21 5 Claims

This invention relates to a range-indicating, variable-power telescopic sight; based on the principle of comparing adjustable spaced reference elements, with known target dimensions, reading said comparison on a scale of distance. More specifically, non-magnifying reference elements positioned within the optical system in a variable-power telescope at the rearward focal plane are superimposed upon the image of the target object and the size of the target object is altered by manually varying the degree of magnification of said target object until such target object is bracketed just between the



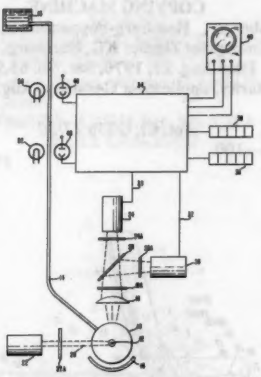
spaced reference elements. A scale of target object distance, also within the optical system, positioned at the rearward focal plane, operativly connected to the means of varying the degree of magnification of the target object and correlated with the various degrees of magnification shows the distance to the target object once the foregoing condition is achieved.

3,684,377

METHOD FOR ANALYSIS OF BLOOD BY OPTICAL ANALYSIS OF LIVING CELLS

Lawrence R. Adams, Shenorock, and Louis A. Kamentsky, Briarcliff Manor, both of N.Y., assignors to Bio/Physics Systems, Inc., Katonah, N.Y.

Filed July 13, 1970, Ser. No. 54,378
Int. Cl. G01n 1/30, 33/16
U.S. Cl. 356—36 25 Claims

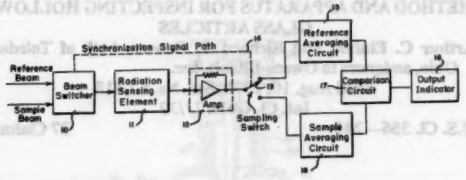


Dye composition for differential blood analysis of living white cells including an aqueous solution of acridine orange, and having a pH factor and osmolality within normal physiological ranges for human blood. The white cell analysis is made by subjecting a suspension of fresh blood in the above solution to radiation from a blue laser, distinguishing the white cells from other blood particles by detecting green fluorescence emitted from the white cells in response to the laser radiation, and measuring the magnitudes of red fluorescence emitted from individual white cells in response to the laser radiation.

3,684,378
DARK CURRENT CORRECTION CIRCUIT FOR PHOTOSENSING DEVICES

Joseph S. Lord, 5 Chicatabut Dr., Walpole, Mass.

Filed Sept. 4, 1970, Ser. No. 69,674
Int. Cl. G01j 3/42
U.S. Cl. 356—93 11 Claims

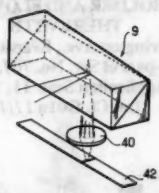


In a flicker-type photosensing device, photosensor dark current is corrected for by applying the output of the photosensor to a current-to-voltage mode amplifier including a special dark current correction loop. In particular, the amplifier has connected between its input and output terminals a loop including a resistor, a grounded capacitor, a gating arrangement adapted to close the loop only during those periods when no light beam is applied to the photosensor, and a second resistor for limiting the capacitor charging rate. In operation, the capacitor charges while the gate is closed during the dark period; and, during pulse periods when the gate is open, it discharges to reduce the photosensor current by an amount nearly equal to the dark current.

3,684,379
INTERFEROMETRIC DEVICE

Andre J. Girard, Chatillon-sous-Bagneux, France, assignor to Office Nationale D'Etudes de Recherches Aerospatiales, Chatillon.S/.Bagneux, France

Continuation of Ser. No. 863,651, Oct. 3, 1969, abandoned.
This application July 6, 1971, Ser. No. 160,084
Claims priority, application France, Oct. 9, 1968, 68169282
Int. Cl. G01j 3/00; G01b 9/02
U.S. Cl. 356—106 S 12 Claims

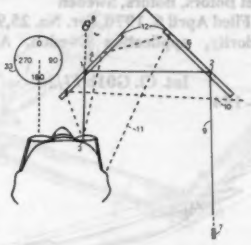


A composite body of radiation-transparent material, acting as an interferometer, comprises two closely juxtaposed prismatic bars of like refractive index contacting each other along a semireflecting interface which bisects a right angle between two outer bar surfaces. One of these orthogonally adjoining surfaces constitutes an entrance side for incident radiation to be split into two components at the diagonally extending interface, the other of these surfaces representing an exit side for such radiation. The throughgoing radiant component is redirected to the beam-splitting interface and thence to the exit side by a reflector at or just beyond a third prism surface parallel to the entrance side, the reflected component being returned to that interface by another reflector at or just beyond a fourth prism surface which diverges longitudinally from the exit side at a small angle whereby the path lengths of the two components differ in length by amounts varying over the length of the body. In an alternate embodiment, the beam-splitting internal surface and the reflecting surfaces are formed by structural elements separated from one another and from the entrance and exit sides by empty spaces, i.e. air gaps or evacuated zones, with a refractive index $n = 1$.

3,684,380
NAVIGATIONAL AID COMPRISING TWO MIRRORS MOUNTED AT PREDETERMINED ANGULAR RELATIONSHIP FOR REVERSE DIRECTION OBSERVATION

Robert Benchley, Jr., 9 Seagate Rd., Noroton, Conn.

Filed Nov. 27, 1970, Ser. No. 93,358
Int. Cl. G02b 27/32; G01c 1/02
U.S. Cl. 356—138 9 Claims



Two-way vision mirrors comprising two mirrors mounted at right angles are provided with two indicator lines which when visually aligned provide sights 180° apart.

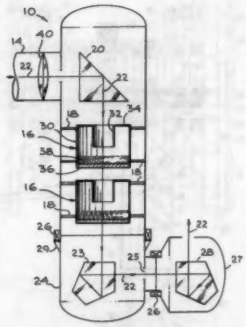
In order to determine a craft's position at sea by visual methods the pilot must be able to take relative bearings on landmarks or other aids to navigation when the ship is heading on a known course. If the object to be sighted is not too far from one side of the bow or the other and is ahead the pilot can sight "over the compass" and get a simultaneous reading of the ship's heading and the object's relative bearing.

Next to knowing the ship's exact heading, the most important bearings are the reciprocal, those to the rear. However, it has not been possible hitherto for a lone pilot at a fixed position, with the compass in full view, to obtain simultaneous bearings ahead and astern.

3,684,381
LASER BEAM PLANAR REFERENCE

Robert M. Zoot, Los Angeles, Calif., assignor to Ati, Inc.

Filed March 23, 1970, Ser. No. 21,773
Int. Cl. G01b 11/26
U.S. Cl. 356—138 3 Claims



A device for automatic and passive self-leveling or self-aligning of a laser beam to a predetermined horizontal or vertical position without dependence upon mechanical moving parts. The device utilizes two trays of microscope immersion oil mounted in a suitable frame through which a laser beam is directed. The oil responds to the pull of gravity and automatically corrects for misalignments through small angles up to several minutes of arc so as to restore the alignment of the laser beam. The device includes beam rotating elements which permit projection of the beam in any desired direction.

3,684,382

Patent Not Issued For This Number

3,684,383

DEVICE FOR PARTICULARLY CONTINUOUS CHECKING AND/OR INDICATION OF CURVATURES ARISING IN GUN BARRELS

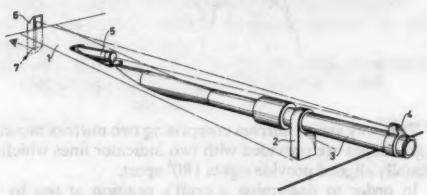
Arnold Johannes Johansson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed April 6, 1970, Ser. No. 25,932

Claims priority, application Sweden, April 22, 1969, 5713/69

Int. Cl. G01b *11/26*

U.S. Cl. 356—154 **5 Claims**



A device for sensing for a curvature in a gun barrel, comprising a reflector fixedly mounted near the muzzle of the gun and a source of light and detector means fixedly mounted near the rear portion of the gun barrel, is provided.

3,684,384

POSITIONING ARRANGEMENT AND FACE DOWN BONDER INCORPORATING THE SAME

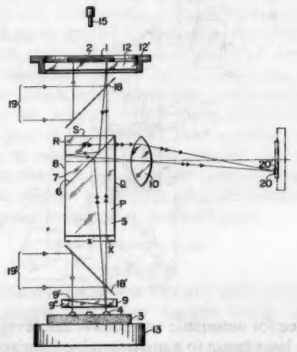
Toku Hojo, Yokohama; Takao Matui, Setagaya, and Rikiti Kimura, Ota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 17, 1970, Ser. No. 20,337

Claims priority, application Japan, March 17, 1969, 44/19566; March 17, 1969, 44/19567

Int. Cl. G01b *11/27*

U.S. Cl. 356—172 **5 Claims**



Two components to be mated together in registration are opposed to each other so as to be adjustable in their mutual position horizontally and vertically, and there is inserted between the two components a compound prism formed with a truncated quadrangular, right prism with a 45° truncation and a rectangular prism united to the prism to form a parallelopiped with a half-silvered mirror film at their interface and with a total reflecting mirror film at the vertical surface of the rectangular prism, so that the two components are opposed in their mated positions and provide for indication of registration from superposition of the two images of the components by adjusting the mutual position therebetween.

3,684,385

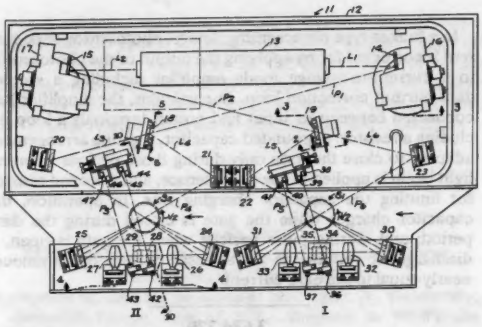
METHOD AND APPARATUS FOR INSPECTING HOLLOW GLASS ARTICLES

Arthur C. Einfalt, and Richard A. Osborn, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Aug. 10, 1970, Ser. No. 62,418

Int. Cl. G01n *21/32*

U.S. Cl. 356—240 **27 Claims**



The method and apparatus for inspecting glass containers for defects wherein the containers are moved successively and continuously past a plurality of inspection stations and laser beams are directed toward the containers and moved to scan the containers. A diminution in the intensity of the beam transmitted through the containers causes a reject signal to be created.

3,684,386

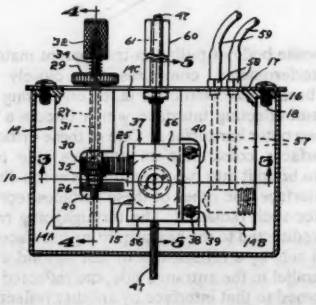
FLOW CELL HOLDER AND FLOW CELL FOR USE THEREWITH

Hans Noll, 2665 Orrington Ave., Evanston, Ill.

Continuation-in-part of Ser. No. 707,063, Feb. 21, 1968, abandoned. This application Sept. 11, 1970, Ser. No. 71,595

Int. Cl. G01n *11/10*

U.S. Cl. 356—246 **4 Claims**



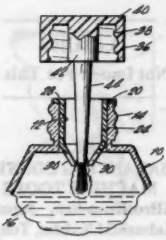
Flow cell holder having an adjustable aperture to be disposed in the light beam between a light source and a light path intersecting its fluid path and the flow cell being attached detachably to the holder with its light path rearwardly of the aperture and in the light path when the holder is in use, the holder preferably incorporating means of temperature control.

3,684,387

DRIPLESS BRUSH APPLICATOR CONSTRUCTION

Robert Glenn, 70-20 108th St., Flushing, N.Y.

Filed March 30, 1970, Ser. No. 23,901
Int. Cl. A46b *11/00*
U.S. Cl. 401—122 1 Claim



An applicator for use with a container having a neck comprising a fitting disposed in the neck and a cap having a brush extending through the fitting. The fitting includes a conical slitted portion which wipingly engages a tapered shank and a brush to remove excess fluid therefrom.

3,684,388

Patent Not Issued For This Number

3,684,389

DOUBLE-END MARKING PEN

Abbot Eron, 180 Surbeck Place, Haworth, N.J., and Theodore Eron, 88 Stewart St., Demarest, N.J.

Filed Oct. 5, 1970, Ser. No. 78,030
Int. Cl. B43k *5/00*
U.S. Cl. 401—207 14 Claims

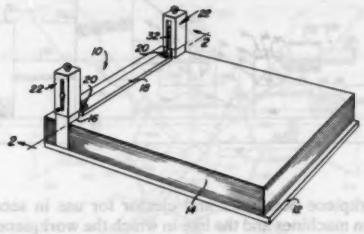
A double-end marking pen having a plurality of marking or writing nibs of various sizes made of felt, felt-like or other suitable material, which may be used singularly or in combinations. The ink is fed to the writing nibs by capillary action from a central reservoir in the shaft of the pen. The nibs can be removed and interchanged to suit various kinds of marking. Fitted caps are provided for protecting the ends of the nibs which are actually not being used.

3,684,390

LOOSE LEAF BINDER WITH SPRING BIASED HOLD-DOWN BAR

James P. Stecklow, 507 Caxton Bldg., Cleveland, Ohio

Filed March 5, 1970, Ser. No. 16,778
Int. Cl. B42f *3/00*
U.S. Cl. 402—69 4 Claims



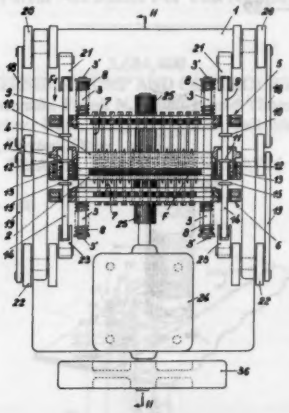
A loose leaf binder having a base upon which a stack of paper is positioned. A hold-down bar contacts a marginal edge of the paper stack and spring means connected to the hold-down bar clamp the paper stack against the base.

3,684,391

MACHINE FOR PERFORATING PAPER SHEETS AND THE LIKE

Roger Liouville, 3 rue Berthe, 92 Colombes, France, and Roger Liouville, 3 rue Berthe, 92 Colombes, France

Filed Dec. 22, 1970, Ser. No. 100,569
Claims priority, application France, June 25, 1970, 7023497; Dec. 24, 1969, 6944853
Int. Cl. B23b *39/22*
U.S. Cl. 408—42 17 Claims



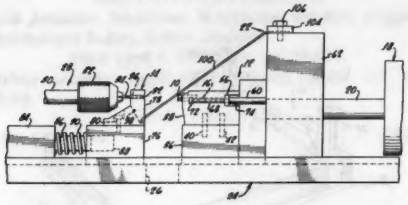
A machine for perforating sheets and particularly stacks of sheets at the same time drilling holes therein from opposite sides and which machine can drill round holes in said sheets alone or as station one of a machine which includes a second station to square said round holes and means for moving the sheets from station one to station two and present the holes in the proper position at station two to have said holes squared.

3,684,392

WORKPIECE POSITIONER AND EJECTOR

Jess Frank Sorenson, Yucaipa, Calif., assignor to Sorenson Engineering, Inc., Yucaipa, Calif.

Filed Nov. 30, 1970, Ser. No. 93,579
Int. Cl. B23b 47/00; B23q 3/06
U.S. Cl. 408—103 33 Claims



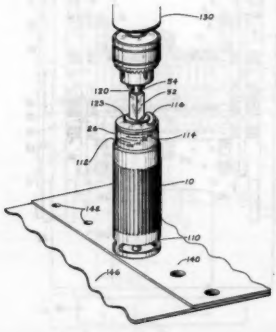
A workpiece positioner and ejector for use in secondary operation machines and the like in which the workpiece is carried by a support block on positioners which are freely slidable in the support block to a backing block which is mounted for resistive movement along with the support block is disclosed. As the support block approaches the backing block, the positioner is retracted into the support block such that the workpiece is then clamped between the support block and the backing block and, so clamped, is moved into contact with a tool at which position the tool performs a modifying operation on the workpiece. One or more resilient fingers exerts a force on the workpiece such that when the support block is moved away from the tool and the backing block, the workpiece is ejected. The support block is moved in one continuous motion toward the tool and in another continuous motion from the tool to its initial position.

3,684,393

PILOT HOLE ENLARGER

Donald H. Gleaves, 50 Somerset St., Huntington Station, N.Y.

Continuation of Ser. No. 788,276, Dec. 31, 1968, abandoned.
This application Jan. 5, 1971, Ser. No. 104,152
Int. Cl. B23b 29/034
U.S. Cl. 408—159 5 Claims



A cutting tool and method for enlarging an aperture in one member so that it is made concentric and of the same diameter as a reference aperture in an adjacent, underlying member. The tool utilizes a plurality of cutters each formed with a cutting edge for cutting away the material from the aperture to be enlarged. Each cutter is furthermore formed with a cam surface disposed for coaction with a thrust cone which acts thereon to urge the cutter cutting edge into contact with the periphery of the aperture being enlarged. Each of the cutters further includes an abutment surface which prevents further cutting of the aperture to be enlarged in wall areas aligned with wall areas of the reference aperture in the adjacent member; the abutment surface being adapted to engage a wall portion of the reference aperture when said wall areas are aligned thereby preventing the cutter cutting edge from coming into cutting engagement with the periphery of the aperture to be enlarged.

3,684,394

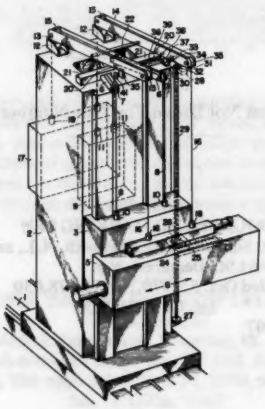
Patent Not Issued For This Number

3,684,395

HEADSTOCK BALANCING CONSTRUCTION FOR MACHINE TOOLS

Akira Nurakami, Hiroshima-ken, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,724
Claims priority, application Japan, Dec. 9, 1969, 44/98,322
Int. Cl. B23b 47/26
U.S. Cl. 408—235 10 Claims



The balancing construction is applicable to a machine tool of the type including an upright column movably supported on a bed, a saddle movable vertically along the column, and a headstock displaceable laterally of the column while being guided by the headstock. The saddle is connected to a respective balance weight by a pair of flexible connecting elements trained over pulleys on the opposite ends of a pair of arms supported on top of the column. A pair of suspension arms are mounted on the upper end of the column for oscillation in a horizontal plane about a vertical pivot axis at one end of each suspension arm, the pivot axis including a tubular pivot. Respective conical rollers support each suspension arm for rolling over the top of the column during the horizontal oscillation, and the two arms are interconnected for movement parallel to each other. Each arm has a pulley at each end, and a pair of flexible connectors are trained over these pulleys to connect the headstock to a respective balance weight movable vertically of the column. These latter flexible connecting elements extend vertically through the tubular pivot axes of the respective arms. A synchronizing mechanism interconnects the headstock to the two suspension arms to synchronize the horizontal oscillation of the suspension arms with a lateral displacement of the headstock.

3,684,396

CENTRIFUGAL FAN WITH IMPROVED CUT OFF MEANS

Donald H. Ball, Deerfield, and Henry Kawulski, Wheeling, both of Ill., assignors to IIG Industries, Inc., Chicago, Ill.

Filed May 4, 1970, Ser. No. 34,182
Int. Cl. F04d *17/08, 29/40*
U.S. Cl. 415—53 3 Claims

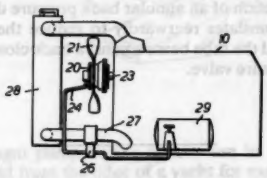
A centrifugal fan having a fan wheel with a fluid inlet at the rotational axis of the fan wheel and a discharge outlet spaced radially outwardly of the inlet in a plane substantially parallel to the axis is provided with increased efficiency and discharge flow by controlling the flow of fluid across a cut off means which peels fluid from the fan wheel for discharge through the outlet. More specifically, some of the fluid moving across the cut off means is withdrawn therefrom through a passageway extending to a region of lower pressure to reduce the thickness of a fluid boundary layer at the cut off means and thereby provide an increased cross sectional area with decreased frictional losses. Preferably, the withdrawn fluid is recirculated within the centrifugal fan.

3,684,397

ROTARY TRANSMISSION DEVICE

Arthur Ernest Henry Elmer, Merry Lodge, Court Orchard, Painswick, England

Filed June 23, 1970, Ser. No. 49,005
Claims priority, application Great Britain, June 25, 1969, 32,008/69
Int. Cl. F04d *29/32*
U.S. Cl. 416—39 6 Claims



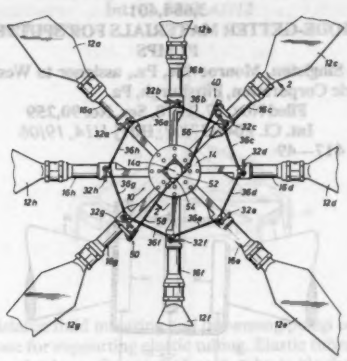
A rotary transmission for cooling fan drives including a friction clutch and a pneumatically operated ram controlling the clutch against spring loading, the compressed air supply being controlled in turn by a thermostat valve. To ensure that the fan will be driven if the air supply or valve fails the clutch is engaged by the spring and disengaged by the ram. The substantial spring loading is absorbed between a pair of abutments which rotate together and a closed axial force-transmitting loop prevents axial forces appearing on the external drive members. The device may be built into the hub of a self contained cooling fan, or may be in the form of a shaft drive unit with a stationary casing.

3,684,398

VARIABLE PITCH FAN FOR HEAT EXCHANGERS

Eugene M. Davidson, and Robert C. Monroe, both of Houston, Tex., assignors to Hudson Products Corporation, Houston, Tex.

Filed April 24, 1970, Ser. No. 15,643
Int. Cl. F04d *29/36*
U.S. Cl. 416—155 1 Claim



The fan includes a hub assembly with a plurality of radially extending fan blade holders. A blade is mounted in each blade holder for rotation around its longitudinal axis to vary its pitch. A crank is connected to each blade to rotate the blade relative to the holder. A crank rod extends between each crank so the rotation of one crank will be imparted to all the other cranks. Jack screws located on opposite sides of the hub assembly rotate the crank arms when the pitch of the blades is to be changed and hold the crank arms from further rotation when the blades have the desired pitch angle.

3,684,399

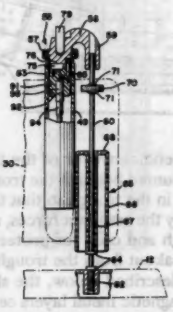
Patent Not Issued For This Number

3,684,400

SUBMERSIBLE PUMP AND CONTROL SYSTEM

Amos M. Einerson; Frank N. Schauer, and Thomas G. Abele, all of Dayton, Ohio, assignors to The Tait Manufacturing Company, Dayton, Ohio

Filed Oct. 26, 1970, Ser. No. 83,736
Int. Cl. F04b *49/04*
U.S. Cl. 417—40 7 Claims



A pump housing encloses an impeller driven by a motor which is operated by a control system including a reed switch

in the gate circuit of a thyristor within the power supply lines to the motor. The reed switch is actuated by movement of a magnet mounted on a movable vertical rod having its upper end portion guided by a ferrous body which is effective to produce a flux path to the switch and to retain the magnet. The rod and magnet are moved by a float slidably mounted on the rod, and the assembly of the ferrous body, switch and thyristor are removable as a unit.

3,684,401

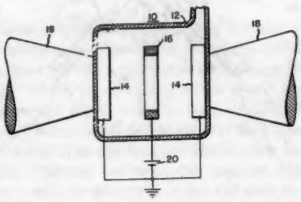
CATHODE-GETTER MATERIALS FOR SPUTTER-ION PUMPS

Jack H. Singleton, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,259

Int. Cl. F04b *37/02;* **H01j** *1/14, 19/06*

U.S. Cl. 417—49 **5 Claims**



An improved cathode-getter member for utilization in a sputter-ion type pump for providing effective pumping of a wide range of gases including hydrogen. The cathode-getter member consists of one or more of the refractory metals capable of forming non-gaseous hydrides such as zirconium, thorium, titanium, tantalum, niobium and vanadium with an additional constituent consisting of one or more of the following elements, aluminum, silicon and beryllium.

3,684,402

CONVEYOR TROUGH

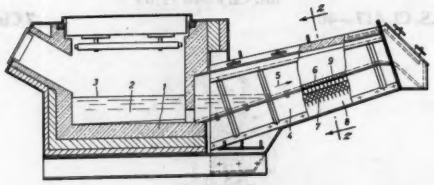
Axel von Starck, Remscheid-Luttringhausen, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Oct. 16, 1970, Ser. No. 81,425

Claims priority, application Germany, Nov. 28, 1969, P 19 59 655.5

Int. Cl. F04b *17/00*

U.S. Cl. 417—50 **5 Claims**



An electromagnetic conveyor of the type having a trough, induction coils mounted beneath the trough for inducing currents in any metal in the trough so that the metal is propelled along the trough by the resultant forces, and a shield mounted between the trough and coils for protecting the coils against dirt and metal breakout from the trough. In the embodiment of the invention described below, the shield is comprised of preferably non-magnetic metal layers separated by insulation so that heating of the shield is minimized. The layers may each consist of a number of sets of metal laminations with insulation separating each set and with the layers extending perpendicular to the trough bottom and cross-wise to the metal flow. Alternately, metal layers separated by insulation can be mounted parallel to the trough bottom with each layer having insulation filled slots or separations. In this arrangement, adjacent slots or separations are preferably offset.

3,684,403

Patent Not Issued For This Number

3,684,404

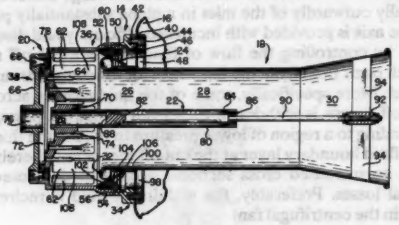
INFLATING APPARATUS

Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

Filed March 16, 1971, Ser. No. 124,887

Int. Cl. F04f *5/48*

U.S. Cl. 417—184 **22 Claims**



An inflating apparatus utilizing aspirating air from a compressed gas source and aspirated ambient air to inflate a life raft, escape slide, bag or other inflatable. There is an axially translating aspirating tube having a forward position in which ambient air is aspirated through a housing laterally into the tube by means of pressurized gas entering the tube through nozzles positioned behind the tube. The tube is held in this forward position by a locating piston responsive to pressure from the compressed air source, and there is in the piston a spring to urge the tube rearwardly. As pressure in the inflatable increases and pressure from the compressed air source declines, the tube by action of an annular back pressure diaphragm and the spring, translates rearwardly to reduce the aspirated air inlet area until the tube bears against a back closure plate so as to act as a closure valve.

3,684,405

APPARATUS FOR PUMPING A FLUID

John Thomas Matthew Wright, Southport, and Alan Hilary Calvert, London, both of England, assignors to National Research Development Corporation, London, England

Filed June 12, 1970, Ser. No. 45,780

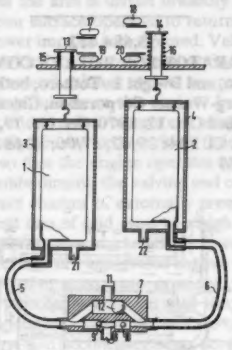
Claims priority, application Great Britain, June 13, 1969, 30,168/69

Int. Cl. F04b *43/10, 45/00;* **A61b** *19/00*

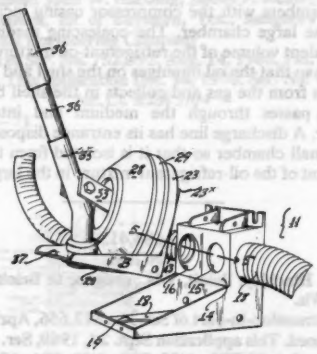
U.S. Cl. 417—394 **5 Claims**

Apparatus for pumping a fluid comprises a plurality of vessels for the fluid, actuator means operable to charge and discharge each vessel, means for connecting each vessel to a common inlet for the fluid while the vessel is being charged

and to a common outlet while the vessel is being discharged and control means for controlling the operation of said actuator means in phase sequence to effect substantially continuous pumping between said common inlet and outlet.



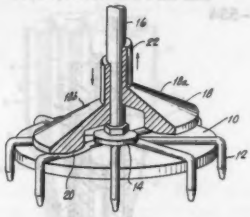
3,684,406
DIAPHRAGM
David V. Edwards, Mill Lane, Neshanic, N.J.
Filed March 10, 1971, Ser. No. 122,865
Int. Cl. F04b 21/00, 39/00, 21/02, 39/10
U.S. Cl. 417—454 3 Claims



A diaphragm pump having special use in marine use, as pumping fluid from the bilge of a yacht for example. The fulcrum for the pump operating lever also serves as a seal so that the pump can be mounted under a deck with an opening in the latter made watertight by the seal and so that the fulcrum can be operated above the deck. The pump mechanism assembly is associated with a body-member from which it is quickly detachable, the body member containing the inlet and outlet means for the fluid and valves controlling the same, and thus the pump mechanism assembly as a unit can be removed and dismantled rapidly for access to the working parts so that any clogging with debris sometimes found in yacht bilges, can be removed and the pump and body member reassembled without special tools. Two handle positions are provided without the need to add or change parts and the pump can be mounted in a variety of positions such as the deck or against a bulkhead.

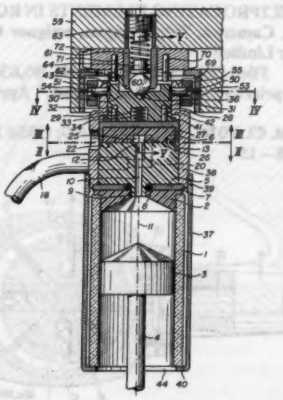
3,684,407
Patent Not Issued For This Number

3,684,408
PERISTALTIC METERING AND DISPENSING PUMP
Ernest Maclin, Paramus, N.J., assignor to Electro-Nucleonics, Inc., Essex County, N.J.
Filed July 29, 1970, Ser. No. 59,276
Int. Cl. F04b 43/12
U.S. Cl. 417—477 6 Claims



A peristaltic fluid metering and dispensing pump consists of a rigid base for supporting elastic tubing. Elastic tubes are supported on the base. One end of each tube is blocked on the base while the other end extends beyond the base for submersion in a liquid to be dispensed. Tube compressing means operating upon at least two tubes simultaneously is provided to alternately compress the tubing against the base and then release the tubing. Air is first expelled from the tubing and liquid is then drawn through the free end of the tubing when the latter is released; liquid is expelled from the same end of the tubing when it is again compressed.

3,684,409
DISTRIBUTOR PUMP
Manuel Claude Sanz, 50B Chemin des Verjus 1212 Grand Lancy, Geneva, and Rene Weber, Aarbergstr. 23, 3294 Burer, Bern, both of Switzerland
Continuation-in-part of Ser. No. 849,078, Aug. 11, 1969, Pat. No. 3,572,977. This application Aug. 19, 1970, Ser. No. 27,290
Int. Cl. F04b 7/00, 17/00, 35/00
U.S. Cl. 417—519 28 Claims



A distributor pump with two ports having a rotary valve switching mechanism and either a syringe type piston or a con-

stant displacement piston. The valve can be either a continually rotating valve or a valve with reciprocal arcuate motion. A rotary bleed needle is provided to prime the pump. The valve mechanism and the pump are connected to a valve actuating mechanism by a positive locking arrangement.

3,684,410

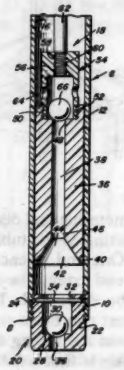
PLASTIC PISTON PUMP

Donal T. Fitzgerald, 882 W. Rocky St., Raymondville, Tex., and Jack S. Campbell, Armstrong Ranch, Armstrong, Tex.

Filed Sept. 29, 1970, Ser. No. 76,365

Int. Cl. F04b *21/04, 39/10*

U.S. Cl. 417—554 **3 Claims**



A piston displacement pump capable of elevating a column of water or the like from a source of supply situated below the locale of the embedded pump and delivering the same, against the forces of gravity, to a usable level. A pump which is unique, in part, in that all of the principal component parts are made of economical polyvinyl chloride or equivalent commercial plastics. This pump comprises a cylindrical barrel which serves as the cylinder, an attached ball check inlet valve, and a reciprocatable plunger. The plunger embodies an axially bored piston, a coacting stem or rod, and a valved operating connection between the piston and its actuating rod.

3,684,411

GOVERNOR FOR FLUID DRIVEN MOTOR HAVING RECIPROCATING ELEMENTS IN ROTOR

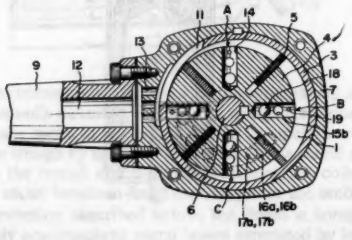
William M. Cameron, Tokyo, Japan, assignor to Nitto Kohki Company Limited

Filed Oct. 15, 1970, Ser. No. 80,839

Claims priority, application Japan, April 11, 1970, 45/30586

Int. Cl. F01c *21/12;* **F03c** *3/00;* **G05d** *13/10*

U.S. Cl. 418—15 **16 Claims**



A plurality of passages are formed in the rotor of an air motor. A reciprocating element is located in each of the passages for varying the flow of air through the passages in response to pressure of the air on the reciprocating element and further in response to the centrifugal force acting on the reciprocating elements, thereby regulating the speed of the rotor.

3,684,412

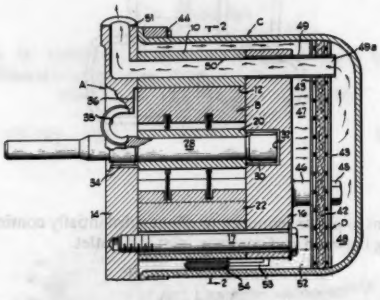
OIL SEPARATOR FOR ROTARY COMPRESSOR

Lester E. Harlin, and Dwight L. Tothero, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 12, 1970, Ser. No. 79,790

Int. Cl. F04c *29/02, 17/00;* **F04d** *29/06*

U.S. Cl. 418—89 **1 Claim**



Apparatus for separating oil entrained in the discharge refrigerant gas of a rotary compressor. This oil-laden refrigerant gas is discharged into a shell surrounding the compressor casing. An oil coalescing medium extends across and adjacent an end of the shell dividing the shell into large and small chambers with the compressor casing located entirely within the large chamber. The coalescing medium confines the turbulent volume of the refrigerant-oil mixture in the large chamber so that the oil impinges on the shell and medium and separates from the gas and collects in the shell bottom while the gas passes through the medium and into the small chamber. A discharge line has its entrance disposed in the top of the small chamber so that it is isolated from the turbulent movement of the oil-refrigerant mixture in the large chamber.

3,684,413

ENGINE

John N. Hinckley, Beloit, Wis., assignor to Beloit College, Beloit, Wis.

Continuation-in-part of Ser. No. 812,656, April 2, 1969, abandoned. This application Sept. 24, 1969, Ser. No. 860,684

Int. Cl. F01c *1/00;* **F03c** *3/00;* **F04c** *17/00*

U.S. Cl. 418—141 **8 Claims**

A rotary fluid engine powered by externally pressurized working fluid including a rotor and a plurality of swinging

arms positioned to engage with and impart a torque force to the rotor when the arms are driven sequentially inward by the selective admission of charges of externally pressurized working fluid. A first segment on the rotor surface engages the free end of each arm as the arm is driven inwardly and a second segment on the rotor surface operates to return the arm outwardly after the power impulse is completed. Valving and conduit means are provided to control the direction of the working fluid to the arms and exhaust means are provided to exhaust spent working fluid from the engine. In one embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid sequentially against said arms so that the engine operates as a simple engine. In a second embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid first against one of said arms at a high pressure and secondly against another arm at a relatively lower pressure so that said engine operates as a compound engine. In a third embodiment, transfer valve means are provided which permit said engine to be switchable between said simple and compound modes of operation. The rotor surface may include a plurality of said first and second segments so that each arm will transmit a corresponding plurality of power impulses to the rotor for each complete rotor revolution.

3,684,414

Patent Not Issued For This Number

3,684,415

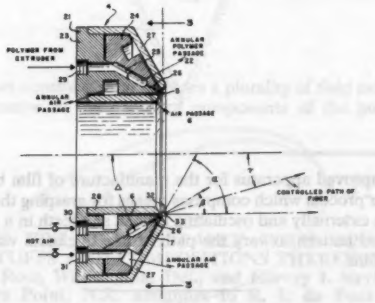
MELT BLOWN ROVING DIE

Robert R. Buntin; John W. Harding; James P. Keller, and Vollie L. Murdock, all of Baytown, Tex., assignors to Esso Research and Engineering Company

Division of Ser. No. 752,592, Aug. 14, 1968, Pat. No. 3,615,995. This application Dec. 16, 1970, Ser. No. 98,523

Int. Cl. B29f 3/04

U.S. Cl. 425—71 **8 Claims**



A roving of entangled and self-bonded fine fibers of thermoplastic resins may be formed by a melt blown roving technique which comprises extruding the thermoplastic resin through a die having the die openings in a circle into a hot gas stream to attenuate the extruded polymer into fibers in the form of a cone of fibers in space and collecting the fibers as a tow. The process yields many unique products which vary in characteristics depending on the specific collection of the fibers.

3,684,416

ADJUSTABLE SPINNING SHAFT FOR MELT-SPUN YARNS

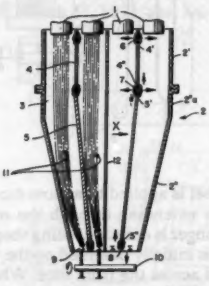
Erich Lenk, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Dec. 14, 1970, Ser. No. 97,782

Claims priority, application Germany, Dec. 16, 1969, P 19 62 946.0

Int. Cl. B29c 25/00

U.S. Cl. 425—72 **6 Claims**



A partitioned spinning shaft to receive and separate filaments converging downwardly in their direction of travel from a plurality of spinning heads in a melt-spinning apparatus, the partitions being adjustably mounted to provide shaft sections of a predetermined narrowing width corresponding closely to the converging paths of the separated filaments without contacting the filaments.

3,684,417

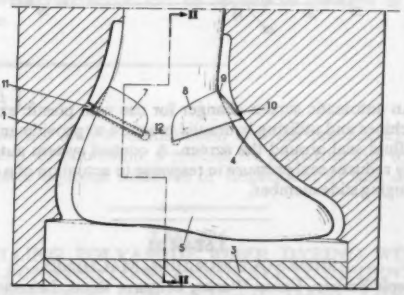
MOLD FOR SKI BOOTS AND THE LIKE

Antoine Joseph Georges Baudou, 33 Les Eglisottes, France

Filed March 1, 1971, Ser. No. 119,656

Int. Cl. B29c 5/00; B29f 1/00

U.S. Cl. 425—119 **8 Claims**



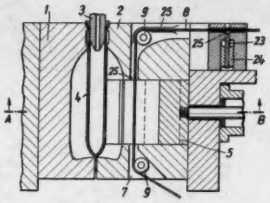
Boot mold comprises separable outer parts and a core. Oblique strips extend downwardly from the core to the outer parts so as to form ankle-high slits at the front and back of the boot formed in the mold.

3,684,418

APPARATUS FOR APPLYING LABELS OR PLATES TO BLOW MOLDED THERMOPLASTIC HOLLOW BODIES

Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen/Westphalia, Germany

Filed June 1, 1970, Ser. No. 42,064
Int. Cl. B29c 17/07; B29d 23/03
U.S. Cl. 425—122 6 Claims



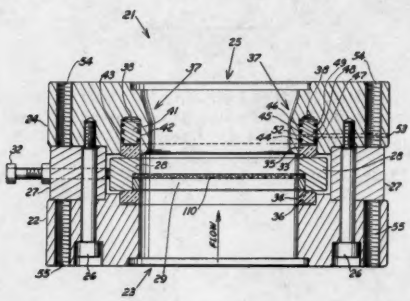
A wrap-round label is applied to a blow-moulded article by means of a plunger extending through the mould wall. The front face of the plunger is concave, being shaped to fit the article, and the label is initially mounted on the plunger so as to be stretched or taut across the front face. When blow-moulding commences, initially the plunger is in an outwardly retracted position. As blow moulding proceeds, the plunger is advanced so as to wrap the label around the article.

3,684,419

SCREEN CHANGER FOR EXTRUDERS

Bradford R. Voight, 174 Morse Road, Sudbury, Mass.

Filed Jan. 25, 1971, Ser. No. 109,371
Int. Cl. B29f 3/00
U.S. Cl. 425—192 14 Claims



An automatic screen changer for use with plastic extruder machines and utilizing hydraulic pressure to provide an annular fluid seal around the screen. A control system automatically reduces seal pressure in response to actuation of a screen changing slide member.

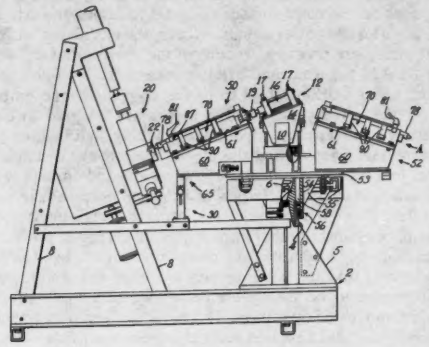
3,684,420

SHOE SOLE MOLDING MACHINES

Joseph Barker, Union Works, Belgrave Road, Leicester, England

Filed July 1, 1970, Ser. No. 51,501
Claims priority, application Great Britain, July 2, 1969, 33,301/69
Int. Cl. B29h 5/12
U.S. Cl. 425—242 1 Claim

Apparatus for injection molding shoe bottoms in which the bottom mold is inclined so that plastic material injected into one lower end flows upwardly at an angle toward the upper end to avoid entrapment of gases. A plurality of molds are



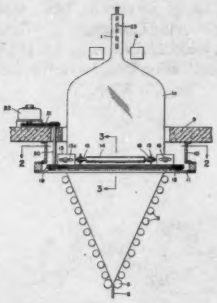
mounted on a rotatable turret, each mold being movable outwardly to engage an injection nozzle.

3,684,421

APPARATUS FOR MANUFACTURE OF FILM

Frank C. Pilcher, Terre Haute, Ind., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 29, 1970, Ser. No. 76,354
Int. Cl. B29d 7/24
U.S. Cl. 425—327 1 Claim



Improved apparatus for the manufacture of film by the tubular process which comprises means for grasping the inflated tube externally and oscillating it back and forth in a predetermined pattern to vary the path of any thickness variation in the film.

3,684,422

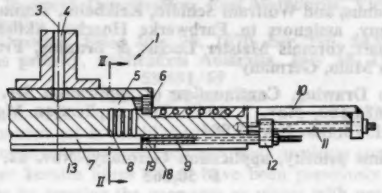
FISHTAIL DIE FOR PRODUCING THERMOPLASTIC FILMS AND SHEETS

Heinz Huesing, Kreis Heidenheim, Germany, assignor to Firma J. M. Voith GmbH, Heidenheim, Germany

Filed March 17, 1970, Ser. No. 20,221
Int. Cl. B29d 7/04
U.S. Cl. 425—466 2 Claims

A fishtail die comprises a first distribution channel extending the length of the die and communicating to a thin slit through which a thermoplastic material is extruded in sheet form. A second distribution channel extends less than the

length of the die and communicates with the first distribution channel through a series of bores and to a feed passage through which the thermoplastic material is supplied to the



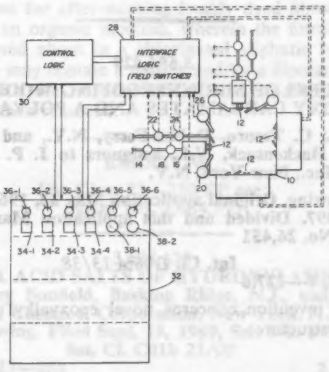
die. The first distribution channel may be provided with adjustable piston-like members to vary the width of a sheet being extruded through the slit.

3,684,423

BURNER CONTROL SYSTEM

Jack A. Bryant, Boston, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Nov. 23, 1970, Ser. No. 92,061
Int. Cl. F23n
U.S. Cl. 431—24 **11 Claims**



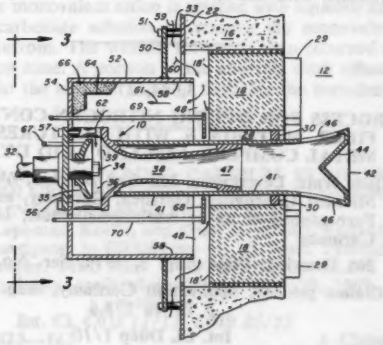
A burner control system includes a plurality of field indicators indicative of the status of components of the burner system, control logic responsive to the field indicators for control burner control signals, logic bypass c0ntrol and circuitry responsive to the logic bypass control for establishing the status of the control logic as a function of the field indicators so that the control logic is maintained in synchronism with the field indicators.

3,684,424

NOISELESS RADIANT WALL BURNER

John Smith Zink, 1338 E. 43rd St.; Hershel Goodnight, 1349 E. 44th St., and Robert D. Reed, 4339 S. Peoria, all of Tulsa, Okla.

Filed March 31, 1971, Ser. No. 129,768
Int. Cl. F23c 7/04
U.S. Cl. 431—114 **7 Claims**



This invention describes an improved gas burner assembly, in which the entire burner assembly is enclosed in a housing which is supported from a flat plate, which is mounted to the steel outer wall of the furnace. The plate is spaced from the furnace to provide entry of air to the burner. The air flows radially along the outer wall of the furnace, cooling the wall, and then into the primary and secondary air inlets of the burner. The housing serves to contain and dampen the high noise level of the burner created by the high speed flow of gas through the nozzle. The noise can still further be reduced by lining the inside of the housing with acoustic insulation. This improved construction can be applied to any type of gas burner.

CHEMICAL

3,684,425

PROCESS FOR DYEING PAPER WITH DISAZO DYESTUFFS AND COMPOSITIONS THEREFOR

John M. Ross, Wilmington, Del., and Harvey I. Stryker, Carneys Point, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 3, 1968, Ser. No. 764,936, now Patent No. 3,621,008. Divided and this application Feb. 1, 1971, Ser. No. 111,616
Int. Cl. D21h 1/46
U.S. Cl. 8—7 **3 Claims**

Direct disazo and tetraazo urea dyes useful for dyeing cellulosic materials and consisting of salts of N,N'-bis-(sulfo- and carboxyarylazoaryl) ureas and salts of N,N'-bis(sulfo- and carboxyarylazoarylazoaryl) ureas, also known as bis(anilino)ketones, for example, bis[3-methyl-4-[(6.8-disulfo-2-naphthyl)azo]anilino] ketone, the cationic portions of said salts being at least 50 atoms percent lithium and/or ammonium, and the remainder, sodium and/or potassium, a process for preparing said dyes, and stable aqueous solutions or suspensions of said dyes.

3,684,426

LEVELLING POLYAMIDE FIBER DYEING WITH SULFONATED LONG CHAIN ALKYL DIPHENYL ETHER AND QUATERNIZED LONG CHAIN ALKYL AMMONIUM ALKYLENE OXIDE CONDENSATE

Jakob Bindler, 63 Kilchgrundstrasse, and Rudolf Keller, 32 Kilchgrundstrasse, both of Riehen, Switzerland

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,841
Int. Cl. D06p 3/06
U.S. Cl. 8—15 **8 Claims**

A process for the even, non-streaky dyeing of fibre material made from synthetic polyamide of differing dye-

stuff-affinity, such as textured polyamide fibre material, is disclosed, which comprises pre-treating said fibre material, at a pH-value of from 2 to 7 and at temperatures of from 30 to 130° C., with aqueous solution of a mixture of auxiliaries consisting of at least one mono- or di-sulphonated higher-alkyl-diphenylether as anion-active compound and at least one cation-active, non-quaternated or quaternated compound containing at least one basic nitrogen atom to which are bound at least one polyglycol ether chain and at least one aliphatic radical having from 10 to 18 carbon atoms, the molecule containing from 8 to 20 di-alkylene-oxy groupings, and, optionally, further auxiliaries normally used in dyeing, adding then, at temperatures of from 30 to 100° C., pre-dissolved anionic dyestuff, and completing the dyeing in the heat. By this process, even on polyamide fibre material tending to exhibit streakiness upon dyeing, even and non-streaky dyeings are obtained with, in themselves, poorly levelling dyestuffs, with extensive exhaustion of the dye bath.

3,684,427

PROCESS FOR DYEING NITROGEN-CONTAINING FIBER MATERIALS WITH MIXTURES OF 1:2 METAL COMPLEX AZO AND ACID DYESTUFFS

Klaus Walz, Leverkusen, Manfred Baecker, Blecher, and Mathieu Quaedvlieg, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

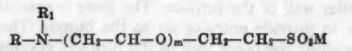
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,737

Claims priority, application Germany, Aug. 7, 1969, P 19 40 178.6

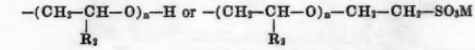
Int. Cl. D06p *1/10*

U.S. Cl. 8—26 6 Claims

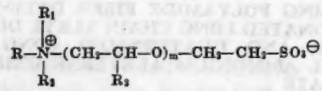
Process for dyeing nitrogen-containing fibre materials with acid dyestuffs and 1:2 metal complex dyestuffs in the presence of amines containing glycol ether groups, characterised in that compounds of formula



in which R represents a C_{12}-C_{22}-alkyl, C_{12}-C_{22} alkenyl or C_{12}-C_{22}-cycloalkyl radical, R_1 represents a methyl group or one of the groupings



R_2 represents hydrogen, or a methyl, ethyl or phenyl group, M denotes a cation, and the sum $m+n$ denotes a number from 5–70, with the proviso that at least 80% of the alkylene oxide units contained in the molecule are ethylene oxide units, or their quaternisation products of formula



in which R, R_1, R_2, m and n have the abovementioned significance and R_3 represents an optionally substituted C_1-C_8-alkyl group or aralkyl group, are used as amines containing glycol ether groups.

3,684,428

PROCESS FOR PRINTING TEXTILE MATERIALS OF NATURAL OR REGENERATED CELLULOSE WITH REACTIVE DYESTUFFS

Horst Homuth, Ludwigsburg, Erich Feess, Losbach, Taunus, and Wolfram Schidlo, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 681,103, Nov. 7, 1967. This application May 4, 1970, Ser. No. 31,884

Claims priority, application Germany, Nov. 12, 1966, F 50,665

Int. Cl. D06p *1/38, 3/66*

U.S. Cl. 8—62 3 Claims

Process for printing textile materials of natural or regenerated cellulose with reactive dyestuffs by printing on said textile materials a printing paste containing a thickening agent, water and either an organic dyestuff containing at least one of the known reactive groups, or an organic dyestuff containing at least one nucleophilic group, and a colourless organic compound which contains at least two reactive groups which are capable of reacting both with the fibre and with the nucleophilic groups of said dyestuff, then padding the print so obtained, after drying, with an aqueous salt-containing solution of an agent having an alkaline reaction and subsequently dwelling the plaited fabric.

3,684,429

PROCESS OF SHRINKPROOFING WOOL WITH EPOXY CARBAMATES AND A POLYAMINE

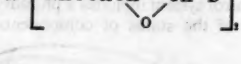
Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Wing Kai Lee, Hackensack, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Original application May 22, 1967, Ser. No. 640,397. Divided and this application Mar. 5, 1970, Ser. No. 26,451

Int. Cl. D06m *13/38*

U.S. Cl. 8—127.6 11 Claims

This invention concerns novel epoxyalkyl carbamates of the structure:



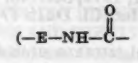
wherein

A is a divalent alkylene radical selected from the group consisting of straight-chain alkylene radicals and branched-chain alkylene radicals,

D is selected from the group consisting of hydrogen and alkyl radicals, and

R is a divalent organic radical of at least 12 carbon atoms selected from the group consisting of

(a) linear polymers terminated on both ends of arylenecarbamoyl radicals



where E is arylene), and

(b) hydrocarbon radicals.

The compositions of this invention are useful for the dimensional stabilization of proteinaceous substrates such as wool.

3,684,430

PERMANENT SETTING OF WOOL AND WOOL-CONTAINING ARTICLES

John Robert Cook, Leeds, England, and Jack Delmenico and Francis William Jones, Belmont, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

No Drawing. Filed July 28, 1970, Ser. No. 58,989
Claims priority, application Australia, July 28, 1969, 58,691/69
Int. Cl. D06m *3/02*
U.S. Cl. 8—128 12 Claims

Permanent set is established in wool or wool containing garments or pieces or such garments or pieces containing other keratin fibres which have been previously partially set by treating the garments or pieces with unsaturated steam under conditions of pressure, temperature and relative humidity at which the rate of setting is greater than the rate of release of set.

3,684,431

PROCESS FOR AFTER-WASHING FRESHLY DYED TEXTILE MATERIAL

Josef Bischof, Birsfelden, Alfred Litzler, Itingen, Jean Hertwig, Basel, and Branimir Milicevic, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,728
Claims priority, application Switzerland, Jan. 10, 1969, 311/69
Int. Cl. B08b *3/00;* D06f
U.S. Cl. 8—137 12 Claims

A process for after-washing freshly dyed fibrous material from an organic medium, wherein the fibrous material is moved about in a chlorinated aliphatic hydrocarbon which may contain a tenside and/or a dipolar, aprotic solvent, with the introduction of heat, and the organic solvent is then removed.

ERRATUM

For Class 23—230 EP see:
Patent No. 3,684,795

3,684,432

WEAK ACID SALTS OF HYDROXYLAMINE

John Henry Bonfield, Basking Ridge, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,585
Int. Cl. C01b *25/00*
U.S. Cl. 423—284 2 Claims

Weak acid salts of hydroxylamine of the formula $NH_2OH \cdot HX$ wherein HX represents an acid or cation exchange resin having an acid dissociation constant of less than 1×10^{-6}. These salts are useful in the preparation of ketoximes from ketones, especially the preparation of cyclohexanone oxime from cyclohexanone.

3,684,433

PRODUCTION OF VANADIUM OXYTRICHLORIDE

Ferdinand Langenhoff, Ranzel, Erich Termin, Laufenburg, Otto Bleh, Bergheim, Sieg, and Arnold Lenz, Cologne-Stammheim, Germany, assignors to Dynamit Nobel AG, Troisdorf, Postfach, Germany

No Drawing. Filed July 22, 1970, Ser. No. 57,359
Claims priority, application Germany, July 21, 1969, P 19 36 988.1
Int. Cl. C22b *59/00*
U.S. Cl. 423—472 7 Claims

In the production of vanadium oxytrichloride wherein vanadium pentoxide, carbon and chlorine are reacted, the improvement which comprises effecting the reaction by contacting a mixture of fine-grained vanadium pentoxide and carbon in the form of a gas permeable layer about 0.5 to 20 cm. high with chlorine at a temperature of about 350 to 750° C. Preferably the process is carried out continuously and the reaction temperature is maintained and controlled by regulating the rate of addition of the reactants. The resulting vanadium oxytrichloride is volatilized at a temperature of about 150° C. and is thereafter condensed.

3,684,434

SOLVENT EXTRACTION PROCESS FOR SEPARATING WATER SOLUBLE IONIC COMPOUNDS

David E. Scheirer, Chester, and William Christian Klingelhoefer, Hopewell, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 23, 1969, Ser. No. 835,638
Int. Cl. C01d *7/02, 11/00*
U.S. Cl. 423—307 11 Claims

In a metathesis reaction between water-soluble ionic salts containing polyvalent anion and monovalent anion by a solvent extraction process using water and water-miscible organic solvent to form two liquid phases in the presence of the salts, the organic solvent-rich phase containing the monovalent anion is washed with aqueous ammonium carbonate solution to remove the monovalent anion therefrom. The washed solvent is then returned to the reaction zone. A portion of the aqueous wash effluent is passed to the reaction zone to facilitate the metathesis reaction.

3,684,435

METHOD OF PREPARING CALCIUM FLUORIDE AND SOLUBLE PHOSPHATE FROM FLUORINE CONTAINING PHOSPHATE ROCK

Lauri A. Lepomaa, Kotka, and Timo O. Roisko, Kokkola, Finland, assignors to Rikkihappo Oy, Helsinki, Finland

No Drawing. Filed May 7, 1970, Ser. No. 35,588
Claims priority, application Finland, May 20, 1969, 1,494/69
Int. Cl. C01f *11/12;* C01b *25/32*
U.S. Cl. 423—163 3 Claims

The invention relates to an improved method for producing and obtaining calcium fluoride from a reaction of a phosphate rock such as apatite with a water-soluble fluoride in aqueous solution such as aqueous ammonium fluoride, the improvement being the employment of an acid such as phosphoric acid or sulfuric acid in an amount to lower pH to about 6.5 or lower but maintaining the pH within a range in which the calcium fluoride formed by the reaction remains undissolved, i.e. remains substantially insoluble, the ammonium fluoride being employed in the reaction preferably in an excessive amount in order to increase the reaction degree.

3,684,436

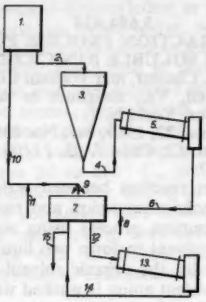
MANUFACTURE OF SODIUM OR POTASSIUM TRIPOLYPHOSPHATE

William Noel Dear, James Ian Ramsay, and Alexander Thomson, Whitehaven, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

Filed July 21, 1970, Ser. No. 56,886
Claims priority, application Great Britain, July 30, 1969, 38,159/69
Int. Cl. C01b *25/30*
U.S. Cl. 423—305 6 Claims

A method for the manufacture of alkali metal tripolyphosphate comprising: forming an aqueous solution of alkali metal orthophosphates selected from the group consisting of sodium and potassium orthophosphates and having a concentration between 10% and 40% P_2O_5 by weight and an atomic ratio of alkali metal to phosphorus of about 5:3; spray drying between ⅛ and ⅝ of said solution to form a dry mixture of orthophosphates; calcining said mixture in a first rotary kiln at a temperature of between 200° C. and 600° C. until the orthophosphates have been converted to preformed tripolyphosphate having a bulk density of from 0.4 to 0.5; cooling said tripolyphosphate and mixing said cooled tripolyphosphate with

the remainder of said aqueous solution of orthophosphates, the cooling being such that the mixture of said cooled tripolyphosphate with said solution has a temperature of less than 120° C.; and heating the mixture in a second rotary kiln at a temperature of 200 to 600° C. until the remainder of the orthophosphates has been converted to tripolyphosphate product.



3,684,437
CHLOROUS ACID PRODUCTION
Joseph Callerame, Rochester, N.Y., assignor to Chemical Generators Inc., Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 817,056, Apr. 17, 1969. This application Sept. 14, 1970, Ser. No. 72,122
Int. Cl. C01b *11/02, 11/00, 7/00*
U.S. Cl. 423—472 **6 Claims**

Pure chlorous acid is produced by ion exchange between a mixed cation-anion exchange resin and a chlorite of an alkali metal or an alkaline earth metal. Gaseous chlorine dioxide may be liberated from the resulting chlorous acid solution by heating.

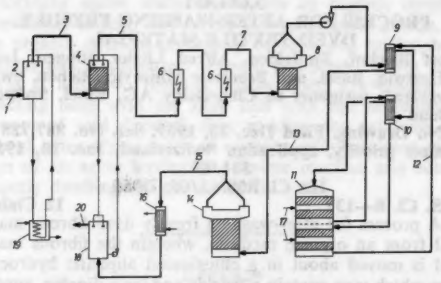
3,684,438
PURIFICATION OF PHOSPHORIC ACID
Robert Joseph Gleason, Iselin, N.J., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Nov. 5, 1970, Ser. No. 87,291
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 423—321 **5 Claims**

A process for purifying wet phosphoric acid or raffinate acid resulting from the purification of wet acid, said process comprising mixing said impure acid with a blend of methyl and isopropyl alcohols in order to precipitate the impurities and recover the purified acid.

3,684,439
HANDLING OF RAFFINATES FROM WET PHOSPHORIC ACID PURIFICATION
Roger A. Rose and Thomas U. Fox, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 22, 1970, Ser. No. 74,490
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 423—321 **5 Claims**

The handling of raffinates produced in a process for purification of wet process phosphoric acid by organic amine extraction is greatly enhanced by preventing solids from caking in the raffinate. This improvement is achieved by dilution the raffinate resulting from the contacting of wet phosphoric acid with an organic amine or organic amine and solvent extractant so as to transfer the phosphate values into the amine phase, diluting the raffinate with water or an acid having an acidity no greater than phosphoric acid, and thereafter additionally contacting said raffinate with additional amounts of amine extractant to further extract the phosphate values whereby the resulting raffnate from such additional contacting is stabilized against the formation of solids upon standing.

3,684,440
COOLING CYCLE FOR SULFURIC ACID CONTACT PLANT
Adolf Stauffer, Pulheim, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co. KG, Cologne, Germany
Filed Apr. 22, 1970, Ser. No. 30,793
Claims priority, application Germany, Apr. 30, 1969, P 19 22 012.3
Int. Cl. C01b *17/76, 17/80*
U.S. Cl. 423—522 **11 Claims**



In a contact process for the production of sulfuric acid, said process comprising the steps of:

(a) cooling hot SO_2-containing feed gas by direct or indirect heat exchange with a cooling liquid;

(b) converting said SO_2-containing gas to an SO_3-containing gas in a contact reactor;

(c) absorbing SO_3 from said SO_3-containing gas with concentrated sulfuric acid in an adsorption tower; and

(d) withdrawing a waste gas from said absorption column, said waste gas being substantially free of water vapor, sulfur trioxide and containing a minor amount of sulfur dioxide, and having a temperature of about 30–70° C. as it is withdrawn from the absorption tower,

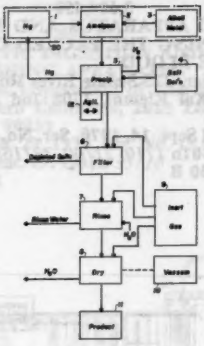
the improvement comprising:

employing said waste gas as a cooling medium for said cooling liquid, said cooling liquid being cooled by evaporative cooling into said waste gas. This process is especially applicable to plant sites having humid weather or insufficient cold cooling water.

3,684,441
PROCESS FOR MAKING NICKEL (II) HYDROXIDE, ESPECIALLY FOR USE IN ELECTRODES
Peter Faber, Kahl am Main, Germany, assignor to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft, Kruppstrasse, Essen, Germany
Filed June 22, 1970, Ser. No. 47,956
Claims priority, application Germany, July 1, 1969, P 19 33 252.6; July 29, 1969, P 19 38 443.1
Int. Cl. C01g *53/04, 49/02;* **C22b** *23/00*
U.S. Cl. 423—592 **11 Claims**

A method for producing the divalent hydroxide of nickel or of iron by reacting a salt of these metals in water

solution with a member of the alkali and alkaline-earth metal groups added in the metallic state or in the form of a slightly soluble (in water) intermetallic compound, especially an amalgam of mercury. One of the products



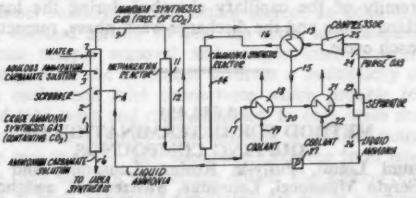
of such a reaction is the desired nickelous or ferrous hydroxide in the form of a precipitate which may be filtered, washed and powdered for further use, e.g. in the production of electrodes for electric storage batteries.

3,684,442

PROCESS FOR REMOVING CARBON DIOXIDE FROM A CRUDE AMMONIA SYNTHESIS GAS IN A COMBINED SYSTEM FOR PRODUCING AMMONIA AND UREA

Keizo Konoki, Yachiyo, and Kozo Ohsaki, Funabashi, Japan, assignors to Toyo Engineering Corporation and Mitsu Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 6, 1970, Ser. No. 9,148
Claims priority, application Japan, Feb. 8, 1969, 44/9,581
Int. Cl. C01c *1/04*; C01b *2/30*; C07c *127/00*
U.S. Cl. 423—359 **9 Claims**



A crude ammonia synthesis gas is passed through a scrubbing zone in which it is contacted by a scrubbing solution comprising liquid ammonia and a substance for assisting the dissolution of ammonia carbamate, with the ammonia being supplied at a rate so that the molar ratio of NH_3/CO_2 in the scrubbing solution adjacent the discharge end of the scrubbing zone is at least 3.0:1, preferably 4.0:1 to 20.0:1. Residual carbon dioxide in the ammonia synthesis gas leaving the scrubbing zone can be removed by adding water or an aqueous solution thereto and/or by subjecting said gas to a methanization reaction. Heat is removed from said gas, by indirect heat exchange, only after substantially all of the carbon dioxide has been removed therefrom.

3,684,443

PROCESS FOR THE PRODUCTION OF FIBROUS REFRACTORY OXIDES OF POLYVALENT ELEMENTS

Hans Zirngibl, Duisburg, and Gerhard Winter, Henning Erfurth, and Manfred Mansmann, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 888,963, Dec. 29, 1969. This application May 8, 1970, Ser. No. 35,924
Claims priority, application Germany, Jan. 2, 1969, P 19 00 064.7; Aug. 28, 1969, P 19 43 636.3
Int. Cl. C01g *23/04, 1/02, 25/02*
U.S. Cl. 423—612 **12 Claims**

A method for the production of oxide whiskers of the elements Ti, Be, Mg, Ca, Zn, B, Al, rare earth metals, Si, Sn, V, Zr, Sb, Cr, Mn and Fe or mixtures thereof by contacting a compound of the aforementioned elements with a melt of at least one salt of a sulfur-containing oxyacid capable of forming a volatile anhydride under the reaction conditions. Optionally the melt contains additionally at least one metal halide preferably an alkali metal or alkaline earth metal halide. Normally the reaction is carried out at a temperature of between about 600 and 1200° C. The oxide whiskers which form in the melt are easily separated from the reaction mixture either by centrifuging or filtering the hot melt or by removing the whiskers from the reaction byproducts still in the melt by dissolving said byproducts in water.

3,684,444

Patent Not Issued For This Number

3,684,445

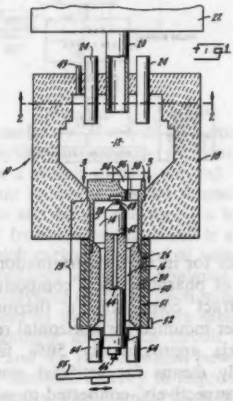
Patent Not Issued For This Number

3,684,446

METHOD FOR HIGH-TEMPERATURE TREATMENT OF PETROLEUM COKE

Richard F. Markel, Niagara Falls, N.Y., assignor to Superior Graphite Company, Chicago, Ill.

Filed Feb. 24, 1970, Ser. No. 13,308
Int. Cl. C01b *31/04*
U.S. Cl. 423—448 **12 Claims**



The invention provides a method and apparatus for high-temperature treatment of petroleum coke. In carry-

ing out the method, calcined petroleum coke, which is preferably hot, is introduced into a graphitizing zone and heated by direct electrical resistance. The coke is continuously agitated during the heating, and is moved downwardly through the graphitizing zone. After passing through the graphitizing zone, the coke is continuously transferred to a tempering and cooling zone, where it is continuously agitated. If it is desired to desulfurize the coke, it is heated to at least about 1700° C., while graphitization requires a temperature of at least about 2200° C.

3,684,447

PRODUCING HYDROGEN BY CONTACT OF STEAM WITH IRON OXIDE PROMOTED WITH ZINC FERRITE

Harlin D. Johnston and Roy C. Fury, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,565
Int. Cl. C01b *1/08;* **B01j** *11/22*
U.S. Cl. 423—658 **6 Claims**

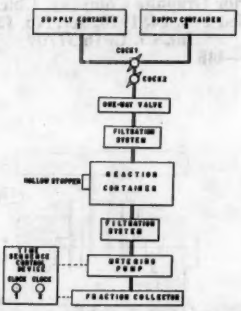
Zinc ferrite is incorporated with iron oxide and used to produce hydrogen from steam in the steam-iron process.

3,684,448

APPARATUS AND PROCESS OF IN VITRO DETERMINATION OF THE DISSOLUTION BEHAVIOR OF DRUGS OR PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME IN THE GASTROINTESTINAL TRACT

Herbert Stricker, Ingelheim am Rhine, Germany, assignor to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

Filed June 26, 1970, Ser. No. 50,018
Claims priority, application Germany, June 30, 1969, P 19 33 118.1
Int. Cl. B01d *11/04;* **G01n** *33/16*
U.S. Cl. 23—230 B **4 Claims**



An apparatus for in vitro determination of the dissolution behavior of pharmaceutical compositions in the gastrointestinal tract comprising a thermostatically controlled, cylinder mounted for horizontal rotation about its cylindrical axis approximately 50% filled with solid spheres, supply means for artificial stomach fluid and gastric fluid, respectively, connected to said cylinder, metering means and fraction collector connected in series to a discharge outlet of the cylinder and time sequence control means for actuating the metering means and fraction collector and process of using said apparatus.

3,684,449

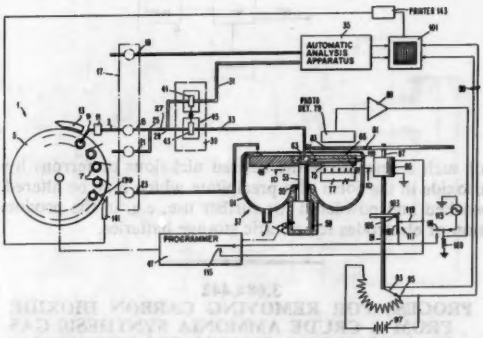
Patent Not Issued For This Number

3,684,450

AUTOMATIC APPARATUS AND METHOD FOR DETERMINING THE PACKED CELL VOLUME OF WHOLE BLOOD

Stanford L. Adler, 275 Saddle River Road, Monsey, N.Y. 10952, and Kai Klemm, 1708 2nd Ave., New York, N.Y. 10828

Filed Sept. 14, 1970, Ser. No. 71,703
Int. Cl. G01n *1/10, 21/00, 33/16;* **B04b** *5/12*
U.S. Cl. 23—230 B **52 Claims**



An automatic apparatus for determining the hematocrit of blood samples provides for the serial loading of blood samples in a same capillary chamber defined in a continuously rotating centrifuge head, and for passing wash fluid through such chamber before each loading-packing phase. The blood samples and wash fluid are introduced successively into a central well defined in the centrifuge head, and centrifugally forced into the capillary chamber. A valving arrangement operates to seal and unseal the outer extremity of the capillary chamber during the loading-packing phase and the discharge-wash phase, respectively, of each cycle.

3,684,451

METHOD FOR DETERMINATION OF COUPLING COMPOUNDS

Gianni Linoli, Pully-la Rosiaz, Lausanne, and Enzo Sergio Mannucci, Lausanne, Switzerland, assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Original application June 23, 1966, Ser. No. 559,754. Divided and this application Aug. 20, 1969, Ser. No. 870,904
Int. Cl. C07g *7/02;* **C08f** *27/08;* **G01n** *31/00*
U.S. Cl. 23—230 R **2 Claims**

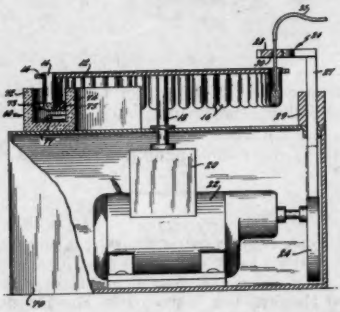
A novel insoluble polymeric diazonium salt color developer consisting of a diazotized aromatic polyamine bound by an amide linkage to a cation exchange resin can be prepared by reacting a cation exchange resin containing acid groups with a halogenating agent to convert some of the resin acid groups to acyl halide groups, reacting the resulting acyl halide groups with an aromatic polyamine to form a resin containing amide linkages and free aromatic amino groups, and then diazotizing the free aromatic amino groups. The resulting insoluble color developer can be used to detect coupling compounds by forming colored reaction products with such coupling

compounds. This color developer can also be used to detect an enzyme system wherein the enzyme catalyzes a reaction with a suitable substrate to release a coupling compound which will form a colored reaction product with the insoluble color developer.

3,684,452
AUTOMATIC DIGESTION AND DRY ASHING APPARATUS

Samuel P. Bessman, Department of Pharmacology, University of Southern California, 2025 Zonal Ave., Los Angeles, Calif. 90033

Filed Feb. 27, 1970, Ser. No. 15,045
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 R **10 Claims**



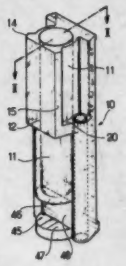
Apparatus for performing analytical procedures wherein a multiplicity of test tubes are mounted on a turntable or endless belt and the sample inside each tube is evaporated and dry or wet ashed. A U-shaped heating channel through which the turntable mounted tubes pass has a multiplicity of heating coils mounted in the channel walls. A coil in each side wall of the channel is just above the liquid level in the tube so as to heat the tube and contents to progressively more elevated temperatures without causing boiling and bumping. The distal half of the channel contains at the bottom thereof an additional heating element further to heat the tubes and contents. A special sample removal and sample inlet structure forming part of the invention involves a multiplicity of suction outlet and inlet connections which provide for a staged tube wash and rinse sequence. In each wash and rinse substation a liquid inlet line and a suction outlet line dip into the tube with wash water flowing from inlet into the tube then out the suction outlet. The suction outlet tube in each successive substation are set at a higher level, so that the next to final wash and rinse substation leaves the tube full of liquid and the final wash substation removes it almost completely.

3,684,453
SPECIMEN TUBE DEVICE

Gerard Lartigue, Fontenay-aux-Roses, and Pierre Durand, Fresnes, France, assignors to Electronique Marcel Dassault, Paris, France

Filed Mar. 23, 1970, Ser. No. 21,910
Claims priority, application France, Mar. 26, 1969, 6908894
Int. Cl. G01m *1/10*
U.S. Cl. 23—253 R **4 Claims**

A specimen tube particularly useful for the analysis of blood samples by an automatic blood analyzing machine comprises a main tube, an auxiliary tube and an information support. A pair of flanges are provided on the auxiliary tube for engagement with grooves provided on the main tube so that the auxiliary tube can be assembled

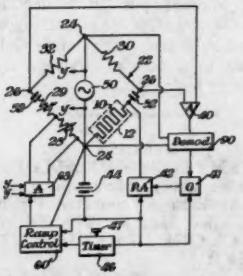


or disassembled relative to the main tube by sliding. The information support is adapted to support punched cards for identifying each specimen tube.

3,684,454
SOLIDS PYROLYZER

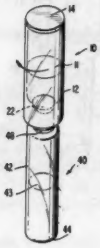
Aaron J. Martin, R.D. 3, Kennett Square, Pa. 15136, and Eugene J. Levy, R.D. 1, Box 29B, Oxford, Pa. 19363

Filed Dec. 18, 1970, Ser. No. 99,585
Int. Cl. G01n *31/08, 33/00;* H05b *1/02*
U.S. Cl. 23—253 PC **11 Claims**



A pyrolyzer, useful in pyrolysis-gas chromatography and other pyrolysis applications, includes a filament adapted to receive a sample to be pyrolyzed. The filament itself is an element having a positive temperature coefficient of resistance and forms one leg of a bridge circuit. The output signal from the bridge circuit is applied to the control means which varies the electrical power applied to the bridge in accordance with the unbalance condition of the bridge, the pyrolyzing filament functioning both as the heating element and as the temperature sensing element. An automatic clamping impedance circuit controls the bridge imbalance and the rate at which power is applied to the bridge and filament, thereby to improve the reproducibility of the results. The filament itself is constructed of a nickel-chromium alloy, which provides a tensile strength and the alloy is plated with gold which has the advantage of providing an inert material that increases the temperature coefficient of resistance of the filament

3,684,455
APPARATUS FOR MIXING LIQUIDS
Michael Vacirca, Port Jefferson, Michael Smith, Ronkonkoma, and Louis Tejera, Central Islip, N.Y., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed Dec. 19, 1969, Ser. No. 886,559
Int. Cl. G01m *33/16*; B65d *25/08, 79/00*
U.S. Cl. 23—253 R 3 Claims



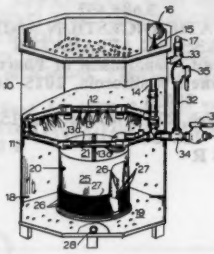
Apparatus for mixing liquids such as a blood serum and a reagent employed in testing the serum, wherein a premeasured amount of the reagent is prepackaged in a sealed plastic vial having internal threads in the mouth thereof and a frangible seal plug in the mouth at the lower end for sealing the premeasured amount of reagent in the vial. The blood serum is placed into a glass vial having external threads which may be screwed into the mouth of the plastic vial to break the seal plug and thereby allow the serum to be mixed with the reagent. In addition to the seal provided by the mating threads on the vials, the mixed liquids are further sealed by interengagement between an external shoulder on the glass vial and a corresponding annular portion projecting from the mouth of the plastic vial. The actual mixing of the liquids may be performed by grasping the united vials and manually shaking them as a unit so that the mixing of the liquids takes place in both vials.

3,684,456
DETERMINATION OF ALCOHOL
Paul W. McConnaughey, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
No Drawing. Filed Jan. 8, 1970, Ser. No. 1,547
Int. Cl. C09k *3/00*; G01n *31/22*
U.S. Cl. 23—254 R 4 Claims

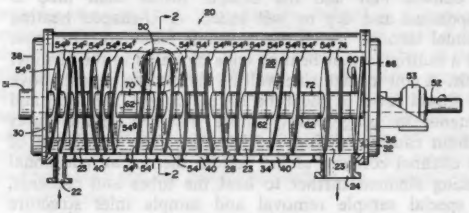
A colorimetric detector tube for determining alcohol in the breath contains a reagent of granular silica gel impregnated with a solution of a hexavalent chromium compound in a mixture of an acid of pentavalent phosphorous with sulfuric acid or perchloric acid.

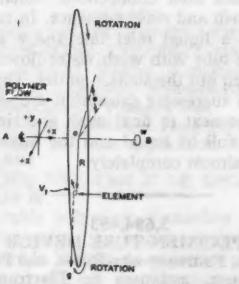
3,684,457
BRINER
Peter J. Pinto, Union City, Donald M. King, Alameda, and Roy B. McCarthy, San Leandro, Calif., assignors to Leslie Salt Co., San Francisco, Calif.
Filed Jan. 4, 1971, Ser. No. 103,694
Int. Cl. B01f *1/00*; C01d *3/04*
U.S. Cl. 23—271 7 Claims

A vertically disposed tank has a bottom, side wall or walls, an upper end, and a shelf or series of brackets around its wall, preferably at two levels, an upper level for kiln-dried salt and a lower level for vacuum-refined salt. A ring of tubing rests on one shelf, depending on the kind of salt being brined. The tubing has nozzles, preferably two rows, one directed downwardly and one directed inwardly and downwardly at approximately thirty degrees to horizontal. A constant water level and head is maintained. A collection drum at the bottom of the tank has a wall that is imperforate except adjacent the bottom, where openings are provided, and there is an outlet at the upper end of the drum for withdrawing the saturated solution. The openings are covered by a fine mesh screen of sufficient closeness to prevent the passage of solid salt particles while admitting the liquid saturated solution.



3,684,458
PROPULSION AND PROCESSING APPARATUS FOR FLOWABLE MATERIALS
William L. McCammon, Hopewell, and George E. Bishop, Colonial Heights, Va., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jan. 8, 1970, Ser. No. 1,419
Int. Cl. B01f *7/10*; B65g *29/00*; C08f *1/98*
U.S. Cl. 23—285 14 Claims





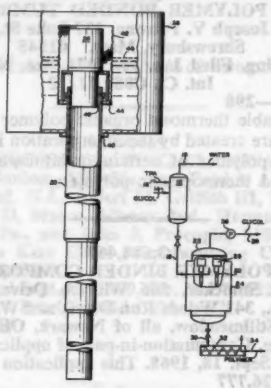
A rotating structure having an array of discoidal members coaxially mounted thereon to rotate therewith. The discoidal members are inclined away from normality to the axis of rotation, and the most rearward points of the

peripheries of the successive discs are disposed along a helicoidal line coaxial with the rotation of the structure, which disposition of the discs causes the structure as a whole to emulate the action of a screw in that the flowable material is propelled through the apparatus. Preferably, the discoidal members are foraminated, e.g. formed of perforated sheets or screening material.

3,684,459
PLUG METERED EVAPORATIVE REACTION TUBE

John E. Tate, Louisville, Ky., and David E. Borenstein, Isaac L. Langley, Jr., and Jack A. Banning, Greenville, S.C., assignors to Phillips Fibers Corporation

Filed Aug. 20, 1970, Ser. No. 65,534
Int. Cl. C08f *1/98*
U.S. Cl. 23—285 7 Claims

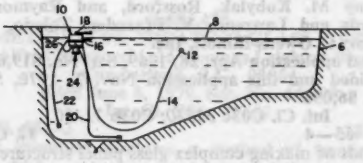


Apparatus comprising a vertical evaporative tube wherein a plug is positioned in the uppermost part of the tube to meter monomer evenly over the inner surface of the tube. Preferably the tube becomes smaller toward the bottom end thereof and a filter is provided to remove solid matter prior to metering the reactants into the tube. Further uniformity of the film is achieved by providing a matte surface on the interior of the tube.

3,684,460
SWIMMING POOL CHLORINATOR

Howard M. Arneson, San Rafael, Calif., assignor to Arneson Products, Inc., San Rafael, Calif.

Filed Nov. 25, 1970, Ser. No. 92,621
Int. Cl. B01f *3/12*
U.S. Cl. 23—267 A 7 Claims

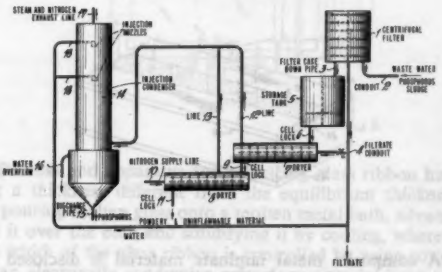


A chlorinator for swimming pools defined by a downwardly opening receptacle closed with a removable cover having a plurality of apertures permitting a fluid exchange between the receptacle interior and exterior. Solid chlorine pellets are in the receptacle. The receptacle is mounted to the underside of a swimming pool cleaner floating about the swimming pool surface so that the receptacle is submerged and the pellets are contacted with swimming pool water entering through the apertures. Chlorine solution is dispensed through the apertures directly into the pool water. The continuous, random motion of the swimming pool cleaner and the chlorinator effects a relatively even distribution of the chlorine solution into the body of water.

3,684,461
PROCESS AND APPARATUS FOR USE IN THE WORK-UP OF WASTE WATER CONTAINING PHOSPHORUS SLUDGE

Fritz Muller, 3 Am Grunen Weg, Knapsack, near Cologne, Germany; Karl-Heinz Stendenbach, 6a Am Hulderberg, Bruhl-Pingsdorf, Germany; and Horst-Heinrich Weizenkorn, 6 Uhlandstrasse, Efferen, near Cologne, Germany

Filed Nov. 12, 1969, Ser. No. 875,868
Claims priority, application Germany, Nov. 13, 1968, P 18 08 541.1
Int. Cl. C01b *25/00*
U.S. Cl. 23—293 R 8 Claims



Process for the continual work-up of waste water having phosphorus sludge therein, such as that obtained in the electrothermal production of phosphorus. The waste water is first filtered in a filtration zone, the resulting filter cake is predried in a preliminary drying zone, the predried filter cake is conveyed through at least two additional drying zones maintained at temperatures between about 100 and 380° C., gaseous and vaporous matter issuing from said additional drying zones is delivered to a condensation zone, the phosphorus and water are condensed therein and separately removed therefrom.

3,684,462
PROCESS FOR PRODUCING A DIHALOBORANE-CONTAINING STREAM

Hal B. H. Cooper, 4234 Chevy Chase Drive, Pasadena, Calif. 91103

No Drawing. Continuation-in-part of application Ser. No. 695,558, Jan. 4, 1968. This application Apr. 22, 1970, Ser. No. 31,018
Int. Cl. C01b *6/10*
U.S. Cl. 423—276 19 Claims

A process for the production of a dihaloborane-containing stream which involves mixing and reacting a boron trihalide-containing stream with a hotter stream of hydrogen, typically having a temperature in excess of 1500° C., to produce a dihaloborane-containing product stream and precipitously quenching the dihaloborane-containing stream to minimize loss of boron-hydrogen bonding.

3,684,463

JEWELRY PRODUCTS

Franz Koelbl, Salzburg-Parsch, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,635
Claims priority, application Austria, Dec. 1, 1967, 10,854/67
Int. Cl. B22f 1/00
U.S. Cl. 29—182.8 8 Claims

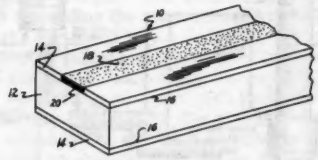
This invention pertains to the manufacture of jewelry and to articles of jewelry having the physical appearance of gold but improved scratch resistance and containing a major amount of a metal selected from the group consisting of tantalum carbide, zirconium nitride, titanium nitride and vanadium nitride and a binder from the group consisting of iron, cobalt, nickel and their alloys.

3,684,464

COMPOSITE METAL LAMINATE MATERIAL AND LEAD FRAME

Marvin B. Happ, Hingham, Mass., and James G. Harper, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1970, Ser. No. 86,658
Int. Cl. H01b 5/14
U.S. Cl. 29—191.6 4 Claims



A composite metal laminate material is disclosed as well as a lead frame fabricated therefrom which is particularly adapted for use in the manufacture of plastic encapsulated integrated circuit devices. The composite metal laminate includes a core of metallic material disposed intermediate and metallurgically bonded to outer metallic layers of a different material from the core and further includes a stripe having an exposed surface of a material selected from the group consisting of silver, gold, or aluminum, metallurgically bonded to one of the outer metallic layers and extending longitudinally of the outer metallic layer in order to provide a bonding surface. The composite metal laminate material is adapted to be formed into a lead frame configuration to permit the mounting of an integrated circuit device on a portion of the stripe, while electrical connections may be made between the device and various regions of the lead frame bonding surface defined by the stripe.

3,684,465

FUEL BRIQUETS AND THEIR METHOD OF MANUFACTURE

Harry L. Hsu, Johnson City, Tenn., assignor to Great Lakes Carbon Corp., New York, N.Y.

Filed July 27, 1970, Ser. No. 58,607
Int. Cl. C10l 5/00
U.S. Cl. 44—10 10 Claims

Fuel briquets with good burning properties, complete water resistance and excellent strength are produced. The method of producing them consists in mixing carbon aggregate composed of particulate raw coke (such as delayed coker, raw petroleum coke) and supplemental particulate carbon material (which preferably is or includes an anthracitic material), with 3–10% ammonium lignin sulfonate and water followed by briquetting and heat treatment at a temperature between 200° C. and 600° C. typically for a period of time between 10 and 120 minutes. The amount of supplemental carbon material, e.g. anthracitic and/or other material, used in the carbon or coke mixture depends upon a number of factors, especially its ash and volatile matter content as well as product specifications. In any case, it will not amount to more than 90% of the carbon aggregate employed and more typically will be 75% or less. Briquets possessing high strength in both their "green" and final heat-treated states can be produced even while employing a rapid forming operation, i.e. roll briquetting.

3,684,466

ORGANIC POLYMER BONDED TUMBLING CHIP

Joseph V. Petrone, 337 Lake St., Shrewsbury, Mass. 01545

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,672
Int. Cl. C08g 51/12
U.S. Cl. 51—298 3 Claims

More durable thermoset organic polymer bonded tumbling chips are created by the incorporation in the thermoset organic polymer of certain quantities of granulated or pulverized thermoplastic polymers.

3,684,467

TERPOLYMER BINDER COMPOSITION

Clayton A. Smucker, 506 Willrich Drive; William H. Rigby, Jr., 341 Woods Run Drive; and Wade V. Zellar, R.R. 3, Stillmeadow, all of Newark, Ohio 43055

No Drawing. Continuation-in-part of application Ser. No. 760,697, Sept. 18, 1968. This application Apr. 8, 1970, Ser. No. 26,777
Int. Cl. C03c 25/02; C08g 5/18, 9/32
U.S. Cl. 65—3 14 Claims

Siliceous fiber batts and the method of forming them wherein an improved resinous binder is employed, said binder being formed by the steps of (1) charging an initial mix of formaldehyde and phenol into a reactor in the presence of a catalyst, (2) reacting the mixture to a stage wherein some free formaldehyde remains, (3) charging the reactor sequentially with dicyandiamide, (4) reacting the dicyandiamide until a lesser amount of free formaldehyde remains, (5) charging urea to the reactor, (6) reacting the urea with the remaining free formaldehyde in the presence of the catalyst, (7) cooling the mixture, (8) neutralizing the mixture with acid, (9) and adding subsequently thereto, oil, silane, additional unreacted nitrogenous compounds and water.

3,684,468

FABRICATION OF PLANAR CAPILLARY TUBE STRUCTURE FOR GAS DISCHARGE PANEL

Wolfgang W. Bode, Sylvania, Glenn H. Dunlap, Maumee, Anthony M. Kobylak, Rossford, and Raymond S. Richards and Lawrence V. Pfaender, Toledo, Ohio, assignors to Owens-Illinois, Inc.

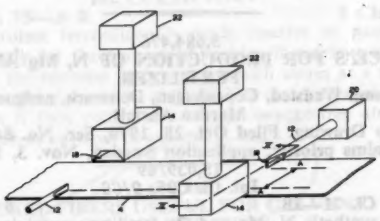
Original application Apr. 28, 1969, Ser. No. 819,641. Divided and this application Nov. 2, 1970, Ser. No. 86,095
Int. Cl. C03c 23/20; C03b 21/00
U.S. Cl. 65—4 12 Claims

Methods of making complex glass panel structures having precision dimensions. Glass tubes, rods, plates or other large glass structures are redrawn individually or in groups to filamentary or capillary size tube or gas continuums which are assembled as a monolayer to form a gas discharge panel, for example. Complex glass structures hav-

ing precision uniform cross-sectional dimensions are constructed. Various novel glass structures and/or con-

ductor configurations and methods of assembling are disclosed.

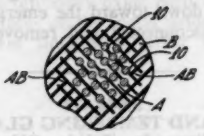
3,684,469
METHOD OF COATING GLASSWARE
William C. Goelzer, Millville, and Patrick A. Moratelli, Jr., Vineland, N.J., Albert M. Griffith III, Mount Joy, Pa., David D. Myers, Albany, Ind., Herman E. Opitz, Lancaster, Pa., and John J. Procopio, Millville, N.J., assignors to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.
Filed Sept. 23, 1970, Ser. No. 74,822
Int. Cl. B44d *1/08, 1/02*
U.S. Cl. 65—60 3 Claims



Scratch resistance of glassware is increased by coating the glass surface with tetraalkyl titanate. This coating should be placed only on the barrel of the glassware and not the finish of the glassware. Controlled coating is accomplished by passing the glassware between closely spaced coacting rectangular dispensing nozzles and exhaust ports which cooperate together to distribute the coating across the barrel of the glassware without coating the finish of the glassware.

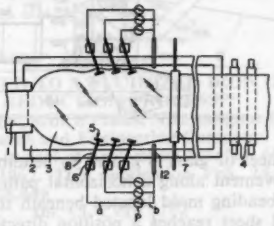
3,684,470
METHOD FOR TREATING GLASS FIBERS
Alfred Marzocchi, 35 Thomas Leighton Blvd., Cumberland, R.I. 02864
Filed June 8, 1970, Ser. No. 44,299
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 12 Claims

This invention discloses a method of treating glass fibers which are incorporated into and thereby reinforce the continuous phase of elastomeric products such as rubber tires and rubber belts. The inventive method can be used to treat glass fibers at the time they are formed. The method comprises applying to the fibers a first coating of an elastomeric, elastomeric-compatible or elastomeric-based composition and, while this first coating is still wet



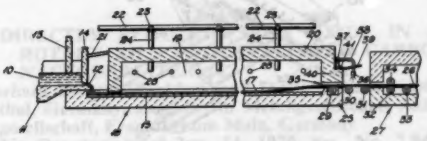
or at least not dry, applying to the fibers a second coating of an elastomeric-based composition.

3,684,471
PROCESS AND APPARATUS FOR PRODUCTION OF GLASS RIBBON ON MOLTEN METAL BATH
Masanari Matsushita, Maizuru, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Oct. 20, 1970, Ser. No. 82,393
Int. Cl. C03b *18/00*
U.S. Cl. 65—91 10 Claims



Process and apparatus for producing glass ribbon having a thickness different from the equilibrium thickness by pouring molten glass onto a molten metal bath, advancing it over the bath and solidifying it by cooling, wherein the width of the glass ribbon is controlled by using rotors of an electrically conductive refractory material having a plurality of projections and disposed at each of the side edges of the molten metal bath at a predetermined angle to the advancing direction of the glass ribbon, which rotors are connected to an electric source and adapted to hold both side edges of the glass ribbon in its cooled but plastic state and either increase or reduce the width of the glass ribbon.

3,684,472
START UP HOOD IN FLOAT GLASS APPARATUS AND METHOD OF USING SAME
Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Feb. 25, 1970, Ser. No. 14,003
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A 8 Claims



Method and apparatus for treating the initial ribbon emerging from the exit end in the start up of a float glass bath to eliminate excessive cooling of the glass and facilitate passage of the continuous ribbon across the lift-out area and into an adjacent annealing lehr. A port-

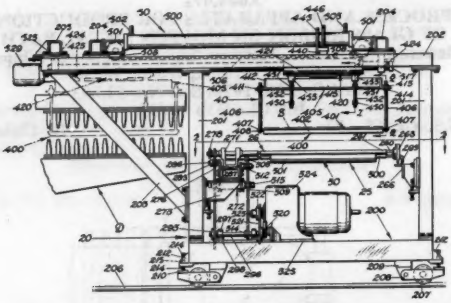
able start up hood mounted above and extending across the width of the exit opening of the plenum chamber has a row of spaced burners extending through a baffle plate and firing down toward the emerging ribbon. The unit is easily disconnected and removed when not in use.

3,684,473

BENDING AND TEMPERING GLASS SHEETS

George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Aug. 28, 1970, Ser. No. 67,838
Int. Cl. C03b *23/02*
U.S. Cl. 65—104 8 Claims



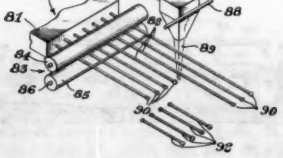
A flat sheet of glass is heated to bending temperature during movement along a horizontal path and toward a ring type bending mold located beneath the path. When the heated sheet reaches a position directly over it, the mold is raised to lift the sheet bodily above the path and rapidly enough to cause it to sag and bend by inertia and gravity into contact with the shaping surface of the mold. The raised mold with the bent sheet thereon is then shifted laterally, first away from the path into an area where the sheet is rapidly chilled to temper it and then back into alignment with the path, after which the mold is lowered to return the bent and tempered sheet to the path for continued movement therealong.

3,684,474

CONVEYING AND FORMING METHODS AND APPARATUS FOR FIBERS HAVING BULBOUS ENDS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of application Ser. No. 685,867, Nov. 27, 1967. This application Nov. 12, 1970, Ser. No. 88,870
Int. Cl. C03b *21/00*
U.S. Cl. 65—105 17 Claims



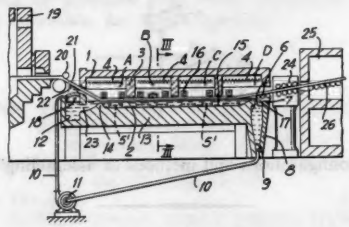
Bulb-ended reinforcing filaments are prepared by melting filaments at spaced locations. The surface tension of the molten filament causes a ball to form on the end of one or more filaments. Subsequent cooling provides a useful reinforcing element for plastics and the like.

3,684,475

FLOAT GLASS APPARATUS FOR PRODUCING SHEET GLASS CRYSTALLINE MATERIAL FROM A GLASS BAND

Konstantin Timofeevich Bondarev, Kiev, Mikhail Ivanovich Kozmin and Anatoly Gavrilovich Minakov, Konstantinovka Donetskoi Oblasti, Vladimir Ivanovich Minin, Donetsk, and Grigory Iosifovich Mitkevich and Anatoly Vasilievich Strekalov, Konstantinovka Donetskoi Oblasti, U.S.S.R., assignors to Ordena Trudovogo Krasnogo Znameni Zavod "AVTOSTEKLO," Konstantinovka Donetskoi Oblasti, U.S.S.R.

Filed Oct. 29, 1968, Ser. No. 771,436
Int. Cl. C03b *18/00*
U.S. Cl. 65—182 R 4 Claims



A band of glass is introduced onto a liquid bath at one end of a tank and is advanced along the bath while being subjected to thermal treatment, so as to be solidified at the other end of the tank where the band is raised from the bath above the sill at the outlet end of the tank. The bath is circulated in the tank and travels in longitudinal open channels at the bottom of the tank. At the inlet of the tank, the bath is returned to a chamber wherefrom the bath travels over a sill into the tank, the glass band being introduced onto the bath at the sill.

3,684,476

PROCESS FOR PRODUCTION OF N, Mg AND Ca FERTILIZER

Bengt Wadsted, Copenhagen, Denmark, assignor to Marden Anstalt

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,939
Claims priority, application Sweden, Nov. 3, 1969, 15,039/69
Int. Cl. C05c *9/00*
U.S. Cl. 71—28 6 Claims

A synthetic N, Mg and Ca fertilizer containing nitrogen in the form of urea which is non-hygroscopic and can be mixed, stored and sown together with the seed, is produced in the following manner: Urea is reacted with a material which contains calcium carbonate and magnesium oxide in the proportion of 1–5 mol of $CaCO_3$ per mol of MgO.

3,684,477

MICROORGANISM CONTROL

John H. Blumbergs, Highland Park, N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 661,233, Aug. 17, 1967. This application Aug. 28, 1969, Ser. No. 853,978
Int. Cl. A01n *11/00, 5/00, 13/00, 9/00*
U.S. Cl. 71—67 6 Claims

A method for controlling the growth of microorganisms, particularly in aqueous systems, by contacting the microorganisms with:

(a) hydrogen peroxide (or a compound capable of releasing hydrogen peroxide in water), and

(b) one of a class of organic compounds containing at least one acetyl group and capable of giving a value of at least one ml. in the "Activity Test" defined below.

3,684,478

METHOD FOR PRODUCING HIGHLY-FLUXED PELLETS CONTAINING OXIDES OF IRON FROM IN-PLANT WASTE PRODUCTS

Lloyd V. Fegan, Jr., Allentown, and James L. Sloughfy, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,802
Int. Cl. C21b *1/30*
U.S. Cl. 75—3 7 Claims

Highly fluxed iron oxide pellets are made from in-plant waste products and fluxstone. A mix suitable for balling is formed. The mix contains not more than about 35% of in-plant waste products which contain metallic iron and ferrous iron, not less than about 35% in-plant waste products which contain iron oxides, and not more than 30% fluxstone, for example dolomite. The carbon in the mix is not more than about 0.5%. Sufficient water is added to insure proper balling. The mix is balled. The green balls are dried at a temperature in the range of about 212° F. to about 600° F. The dried balls are heated to within a temperature range of about 1000° F. to about 1200° F. wherein a substantial portion of the carbon is burned off and the oxidation of metallic iron and ferrous iron to a higher iron state occurs. The temperature of the dried balls is raised to a range of about 2150° F. to about 2350° F. wherein the balls are hardened to form pellets. Substantially all the metallic iron and ferrous iron are oxidized to the higher valence states.

3,684,479

METHOD FOR THE INACTIVATION OF PULVERULENT FERROSILICON

Endre Fabo, Vargon, Sweden, assignor to Airco Alloys AB, Vargon, Sweden

No Drawing. Filed May 18, 1970, Ser. No. 38,481
Claims priority, application Sweden, June 6, 1969, 8,100/69
Int. Cl. C22c *13/04*
U.S. Cl. 75—.5 B 5 Claims

Pulverulent ferrosilicon is made inactive or passive, particularly for the purpose of making it resistant to an alkaline environment by treating it with steam at a temperature of between 300–600° C. The steam treated ferrosilicon is then cooled down in an oxygen-free atmosphere such as nitrogen or argon.

3,684,480

NICKEL FIBERS USEFUL FOR GALVANIC CELL ELECTRODES

Demetrois V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,489
Int. Cl. B22f *1/00*
U.S. Cl. 75—.5 R 1 Claim

Stable, high surface area nickel fibers composed of a single elongated chain of small, interconnected, nearly perfect spheres. The nickel fibers are prepared by the electrolysis of a soluble nickel salt-containing electrolyte solution under conditions of extremely high cathode current density. Galvanic cell electrodes are fabricated using the nickel fibers by compression molding techniques.

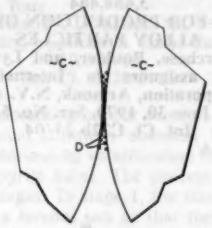
3,684,481

HIGH PURITY NICKEL PRODUCT

Leif Reidar Hougen and Erling Olav Stensholt, Kristiansand, Norway, assignors to Falconbridge Nickel Mines, Limited, Toronto, Ontario, Canada

Original application Mar. 14, 1968, Ser. No. 713,238, now Patent No. 3,545,959, dated Dec. 8, 1970. Divided and this application July 27, 1970, Ser. No. 58,459
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5 BA 5 Claims

A process for the preparation of smooth, dense, free-flowing high purity metal granules by reduction of smooth, dense, free-flowing high purity metal oxide granules. The oxide granules are contacted by a reducing gas at an elevated temperature and reduced as a moving body in the presence of minute refractory oxide particles that adhere to the smooth surfaces of the metal oxide granules and substantially prevent sintering together thereof during



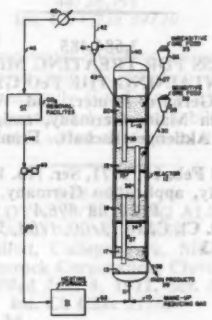
reduction. The concentration of minute refractory particles required to prevent intergranular sintering is so small that the purity of the reduced metal granules is similar to that of the metal oxide granules without the need for any treatment to separate refractory particles from the granules after reduction.

3,684,482

SPLIT FEED TO A FLUIDIZED IRON ORE REDUCTION PROCESS

John H. Mahar, Scotch Plains, N.J., assignor to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 686,084, Nov. 28, 1967. This application Feb. 24, 1971, Ser. No. 118,446
Int. Cl. C21b *1/02*
U.S. Cl. 136—26 9 Claims



Reduction of iron ore to increase metallizations can be obtained by simultaneously reducing two types of ores in one multistage process. Certain types of ores are fed to an initial reduction stage while other types are fed directly to subsequent stages.

3,684,483

DIRECTLY REDUCING IRON OXIDE IN A ROTARY KILN WITH PELLITIZED CARBONACEOUS MATERIAL

Gerhard Reuter, Frankfurt, and Dietrich Werner, Offenthal, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Jan. 14, 1970, Ser. No. 2,949
Claims priority, application Germany, Feb. 28, 1969, P 19 10 147.4
Int. Cl. C21b *11/06, 13/08*
U.S. Cl. 75—33 5 Claims

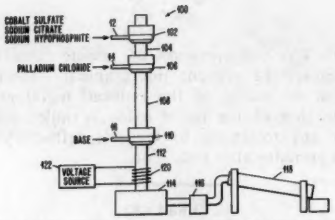
In a process of directly reducing an iron ore in admixture with a carbonaceous material in a rotary kiln, at

least that portion of the unconsumed carbonaceous material removed from the kiln product and having a particle size below 1 millimeter is pelletized, preferably with the addition of a hydrocarbonaceous binder, and recycled.

3,684,484
METHOD FOR PRODUCTION OF METAL ALLOY PARTICLES

Michael A. Marchese, Boulder, and Lynn R. Morgan, Erie, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,288
Int. Cl. C22b *23/04*
U.S. Cl. 75—.5 A **9 Claims**

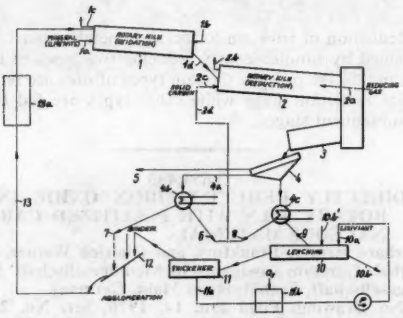


A method and apparatus wherein a plurality of reactant fluids are introduced into a reaction zone through input means which provide for laminar flow of the reactants into the reaction zone while mixing and substantially maintaining the laminar flows of the reaction components and while providing the desired reaction to form uniform fine metallic particles by chemical-oxidation-reduction.

3,684,485
PROCESS FOR TREATING MINERALS CONTAINING THE FeO GROUP

Kurt Meyer, Gerhard Reuter, and Wilhelm Thumm, Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 16, 1971, Ser. No. 115,371
Claims priority, application Germany, Feb. 26, 1970, P 20 08 896.4
Int. Cl. C21b *13/00, 1/06, 53/00*
U.S. Cl. 75—33 **17 Claims**

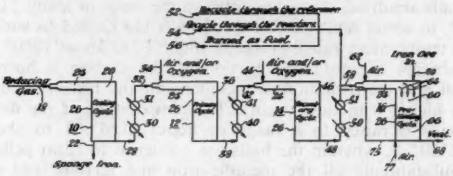


A process for treating a mineral, e.g. ilmenite, containing FeO groups together with a heavy-metal oxide (e.g. TiO_2) wherein the mineral is subjected to a reduction step to transform the iron oxide to metallic iron which is then leached. From the lixiviant, iron oxides and/or hydroxides are precipitated. The precipitate is agglomerated, e.g. into briquettes with a binder, the agglomerate being recycled to the reducing stage to produce sponge iron. The mineral, after leaching, consists of a residue of the heavy-metal oxide of high purity.

3,684,486
DIRECT REDUCTION OF IRON ORE AND THE LIKE

Mohamed A. Osman, Pittsburgh, Pa., assignor to Pullman Incorporated, as represented by its Swindell-Dressler Company Division, Pittsburgh, Pa.

Filed Dec. 23, 1968, Ser. No. 786,315
Int. Cl. C21b *13/14*
U.S. Cl. 75—34 **13 Claims**



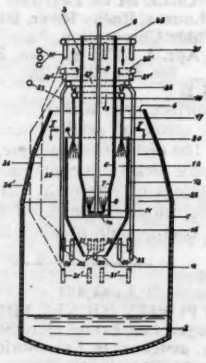
I disclose a method for the production of sponge metal, said method comprising the steps of placing a predetermined quantity of an oxidic ore of said metal in a reductional zone, preheating said ore with non-reducing gas, and passing a quantity of hot reducing gas through said ore to reduce said ore to said sponge metal.

3,684,487
Patent Not Issued For This Number

3,684,488
METHOD OF REFINING MOLTEN METAL

Walter von Haumeder, 6 Mozartstrasse, D-43 Essen (Ruhr), Germany

Filed Mar. 5, 1970, Ser. No. 16,684
Int. Cl. C21c *5/28*
U.S. Cl. 75—52 **11 Claims**



Molten metal, particularly pig iron, is refined by oxygen supplied to the melt substantially in the form of liquid metal oxides. Refining gas, preferably high purity oxygen, blown above the melt surface entrains slag and pulverulent additives to form a refining jet in which a substantial part of the oxygen reacts to form liquid metal oxides which refine the melt under controlled endo-

thermal conditions. A foamed slag is prepared during the first phase of the refining operation by blowing refining gas above the surface of the melt while injecting powdered lime in a stream of refining gas into and through a combustion chamber located above the slag surface, in which the heat liberated by reaction of the exhaust gases drawn in from the converter is absorbed by the lime particles traveling through the chamber on their way to the slag. During the second phase of the process pulverulent cooling additives such as sponge iron are added in the same manner.

3,684,489

METHOD OF RECOVERING METALS FROM SULFIDE-CONTAINING MIXTURES

Klaus Emicke and Wilhelm Goralczyk, Hamburg, Germany, assignors to Norddeutsche Affinerie, Hamburg, Germany

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,508
Claims priority, application Germany, Sept. 19, 1969, P 19 47 535.5
Int. Cl. C22b *15/08, 23/04*
U.S. Cl. 75—101 R **7 Claims**

Metals such as copper and nickel are separated from sulfide-containing mixtures or compositions thereof, e.g. copper-nickel matte, which contain at least one metal whose sulfide is unstable in sulfuric acid. The mixture is slurried in sulfuric acid with a H_2SO_4 concentration of at least 400 grams per liter. The slurry is evaporated to an H_2SO_4 concentration of 1000 g./l. and is then heated to a temperature above 120° C. but below 140° C. (preferably about 130° C.) until the metal having unstable sulfides is converted to its sulfate. The solid and liquid phases are then separated to recover a metal sulfate by leaching from the solid phase and enabling recovery of the metals from the separate phases.

3,684,490

PROCESS FOR RECOVERING ZINC FROM JAROSITE RESIDUE

Georg Steintveit, Odda, Norway, assignor to Det Norske Zinkkompani A/S, Odda, Norway

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,249
Claims priority, application Norway, Oct. 2, 1969, 3,926/69
Int. Cl. C22f *19/00*
U.S. Cl. 75—101 R **3 Claims**

A process for post treatment of jarosite residue produced by precipitation of iron in zinc sulphate solutions in the presence of K, Na and/or NH_4-ions. The jarosite residue is subjected to leaching with sulphuric acid, the acid addition and leaching being carried out in immediate connection with the precipitation of jarosite residue or subsequent to a preceding thickening of the jarosite slurry. The jarosite slurry contains 350–450 g./l. solid material and the leaching is carried out at 50–95° C.

3,684,491

PROCESS FOR THE RECOVERY OF COBALT

Thomas H. Coffield, 4430 Patrick Road, Orchard Lake, Mich. 48033; Gordon G. Knapp, 27625 Vermont Drive, Southfield, Mich. 48075; and James G. Jolly, 27665 E. California, Lathrup Village, Mich. 48075

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,756
Int. Cl. C22b *3/00*
U.S. Cl. 75—103 **7 Claims**

A process for recovery of cobalt under conditions favoring the formation of cobalt tetracarbonyl anion; e.g., specifically the addition of a strong base such as alkali metal hydroxides, carbonates and oxides, during the reductive carbonylation of a reducible cobalt salt which stabilizes the formation of the cobalt tetracarbonyl anion for subsequent recovery of the cobalt values.

3,684,492

PROCESS FOR THE PREPARATION OF ARSENIC-FREE COPPER CEMENT FROM ARSENICAL ACID SOLUTIONS

Ariano Colombini and Bruno Viviani, both of 8 Via Paletto, Novara, Italy; Antonio Massimino, 27 Piazza G. Perotti, Carru, Italy; and Giuseppe Sironi, 3 Via Piave, Novara, Italy

Filed June 30, 1970, Ser. No. 59,867
Claims priority, application Italy, July 1, 1969, 19,010/69
Int. Cl. C22b *3/00*
U.S. Cl. 75—109 **4 Claims**

A process for obtaining copper cement, free of arsenic, from acid arsenical solutions obtained by chlorinating roasting or by chlorinating volatilization of iron minerals, in particular of pyrite ashes. The process consists of the following three stages: In stage 1, the starting solution A is admixed with a ferrous salt so that the molar concentration of the Fe^{++} ion becomes equal to or slightly greater than that of iron Cu^{++}, obtaining thus a solution B. In stage 2, the solution B is brought up to a pH of between 3 and 3.5, at a temperature comprised between 20° and 80° C., with a neutralizer, and is then filtered thereby obtaining filtrate C. In stage 3, the filtrate is cemented with an excess of metal iron, at a temperature of from 20° to 40° C., thereby obtaining copper cement free of arsenic, and a discharge solution D which is also free of arsenic.

3,684,493

SEA-WATER CORROSION RESISTING STEEL CONTAINING ALUMINUM FOR WELDING STRUCTURES

Hiroyuki Kubota, Akihiro Tamada, and Motonori Uemura, Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa-ken, Japan

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,506
Claims priority, application Japan, Mar. 20, 1969, 44/20,791
Int. Cl. C22c *39/20*
U.S. Cl. 75—124 **4 Claims**

A steel whose sea-water corrosion resistability is maintained and improved with the addition of alloying elements which are basically Cu, Cr and Al in place of P and Cu and more particularly the weldability of said steel is improved with the addition of more than 0.30% Al.

3,684,494

FERRO ALLOY CONTAINING ALUMINUM AND MANGANESE

William W. Gullett, College Park, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 8, 1971, Ser. No. 105,088
Int. Cl. C22c *21/00*
U.S. Cl. 75—134 M **7 Claims**

The inherent instability in air of an alloy consisting mostly of manganese and aluminum, the Mn:Al ratio being within the range 1.5 to 0.67, the alloy containing a few tenths percent of carbon, is counteracted by the addition thereto of a small amount of titanium or zirconium.

3,684,495

SUPERCONDUCTING ALLOY

Manfred Wilhelm, Teutonenstr. 23, Nuremberg, Germany, and Bernhard Hillenbrand, Friedrich-Bauer-Str. 16, Erlangen, Germany

Filed Aug. 3, 1970, Ser. No. 60,581
Claims priority, application Germany, Aug. 14, 1969, P 19 41 313.9
Int. Cl. C22c *5/00, 31/00*
U.S. Cl. 75—172 **10 Claims**

A superconducting alloy of the composition

$$(Ce_{1.00-x}A_x)Ru_2$$

wherein "A" is Tb, Dy or Ho. For Tb $0.10 \leqslant x \leqslant 0.24$. For Dy $0.12 \leqslant x \leqslant 0.27$. For Ho $0.10 \leqslant x \leqslant 0.28$.

3,684,496

SOLDER HAVING IMPROVED STRENGTH AT HIGH TEMPERATURES

Jun Tanaka and Yoshihiro Nishibori, Tokyo, Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,224
Claims priority, application Japan, Mar. 17, 1970, 45/21,939; July 17, 1970, 45/62,090; July 20, 1970, 45/62,798
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 AM 4 Claims

A solder consisting of 0.5–7% by weight silver, 0.5–2.5% by weight copper, 0.05–2% by weight chromium and/or 0.05–1% by weight nickel, preferably 0.1–2% by weight aluminium and 0.01–0.3% by weight magnesium and the remainder zinc is provided. This solder has a melting point of from 400° to 500° C., mechanical strength of at least 10 kg./mm.² at a temperature between from 100° C. to 200° C. and exhibits excellent resistance to corrosion.

3,684,497

HEAT RESISTANT HIGH STRENGTH COMPOSITE STRUCTURE OF HARD METAL PARTICLES IN A MATRIX, AND METHODS OF MAKING THE SAME

Charles F. Wendler, St. Clair Shores, and Charles S. Baum, Grosse Pointe Farms, Mich., assignors to Permanence Corporation, Detroit, Mich.

Filed Jan. 15, 1970, Ser. No. 5,823
Int. Cl. C22c *29/00*
U.S. Cl. 75—203 18 Claims

A high strength structure made of hard metal particles, such as metal carbide particles, brazed to each other in a porous lattice of a first brazing metal or alloy, the voids and spaces in the brazing metal or alloy being filled by a solidified second brazing metal or alloy of a melting point lower than the melting point of the first brazing metal or alloy. The second brazing metal or alloy may also contain a dispersion of hard metal particles, such as metal carbide particles, generally of a smaller size than that of the original hard metal particles. The structure is made by mixing a predetermined proportion of hard metal particles with the first brazing metal or alloy in the form of a powder, and by sintering in a furnace so as to obtain a substantially porous structure, followed by a second pass in the furnace of the porous structure covered with the second brazing metal or alloy in a powder form so as to impregnate the porous structure with the melted second brazing metal or alloy.

3,684,498

PROCESS FOR SINTER CLADDING METAL SUPPORTS

Friedrich Heck, Baingser Weg 47, Deilinghofen, Germany

Filed Feb. 9, 1968, Ser. No. 704,415
Int. Cl. B22f *7/00*
U.S. Cl. 75—208 7 Claims

A process for sinter cladding metal supports such as clutch plates comprises applying a layer of sintering powder to the surface of the metal support, sintering the layer of powder to the support, compressing the sintered layer to a pre-determined porosity and then sintering the layer again. The layer of powder applied to the metal support is between three and four times the thickness of the layer after the second sintering operation and the compression of the partially sintered layer takes place between press tools which do not confine the sides of the layer since, after the first partial sintering operation, there is little or no tendency for the partially sintered layer to spread sideways as it is compressed. The fully sintered layer is preferably subjected to a second compression by means of flat press tools as a final sizing operation.

3,684,499

METHOD FOR PRODUCING INTERMETALLIC COMPOUND PERMANENT MAGNET MATERIAL

Franz Hofer, Nussbaumen, and Claus Schuler, Widen, Aargau, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

No Drawing. Filed July 6, 1970, Ser. No. 52,753
Claims priority, application Switzerland, July 10, 1969, 10,533/69
Int. Cl. B22f *1/00*; H01f *1/08*; C01f *17/00, 1/00*; C01g *51/00*
U.S. Cl. 75—211 11 Claims

An intermetallic compound for fine particle permanent magnets is produced by mixing a rare earth metal hydride powder with a purified 3d-metal powder in a stoichiometric ratio under a protective gas atmosphere, the mixture is then pressed to form a tablet, and the tablet is then sintered at a temperature of from 750 to 1250 deg. C. for a period of from four to ten hours under exclusion of nitrogen, oxygen and carbon. The preferred 3d-metal is cobalt sponge and suitable rare earth metals from which the metal hydride is formed include samarium and yttrium.

3,684,500

METHOD OF FORMING PERMANENT ELECTROSTATIC IMAGE WITH TWO-LAYERED PHOTORECEPTOR

Anthony J. Ciuffini, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1970, Ser. No. 99,411
Int. Cl. G03g *13/22*; B41n *1/00*
U.S. Cl. 96—1 R 8 Claims

A photosensitive member having a two layered photoconductive portion which comprises a first layer of vitreous selenium and a second layer overlaying the first layer which comprises an arsenic-selenium alloy. The member is imaged by uniformly electrostatically charging the surface of the second layer followed by uniformly exposing the charged surface to radiation within the range of about 4000 to 6900 angstrom units. The member is then exposed to radiation within the range of 7000 angstrom units to 3 microns which results in the formation of a developable latent electrostatic image which is contained within the photoconductive portion of the imaging member.

3,684,501

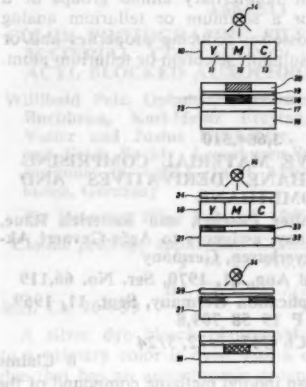
PHOTOGRAPHIC COLOUR CORRECTION METHOD

Pieter Gommer Herremans, 9 Auwersstraat, B 2600 Berchem, Belgium

Filed Mar. 31, 1971, Ser. No. 129,779
Claims priority, application Great Britain, Apr. 14, 1970, 17,751/70
Int. Cl. G03c *7/18*
U.S. Cl. 96—5 8 Claims

A method of reproducing a colour original onto a photographic light-sensitive reversal type multicolour material wherein first the multicolour material is given a normal exposure to the colour original, and, second, the multicolour material is given an additional exposure to a black-and-white mask of the colour original. The black-and-white mask is a separation negative of the colour original produced by exposure of the colour original onto a black-and-white light-sensitive material by means of light in the spectral region which is complementary to the spectral region wherein the colour original shows an undesired

side-absorption, and the additional exposure of the multicolour material to the black-and-white mask occurs by means of light which corresponds to the part of the spectral region wherein the undesired side-absorption occurs.



3,684,502

PHOTOCONDUCTIVE CO-CRYSTALLINE COMPLEX OF PYRYLIUM DYE AND POLYMER USED IN ELECTROPHOTOGRAPHY

Eugene P. Gramza and David D. Schreiber, both of Kodak Park, 1669 Lake Ave., Rochester, N.Y. 14615

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,778

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.6 **9 Claims**

A method is provided for forming a co-crystalline complex of pyrylium dye and polymer which involves dissolving the components in a solvent system in which the solubilities of the components are substantially equal. A nonpolar precipitating liquid in which the components are insoluble is combined with the solution above to produce precipitation of the complex which is then removed from the various liquids. The resultant complex is photoconductive and can be used to sensitize other photoconductors. Electrophotographic elements are prepared by dispersing the so-formed complex in a polymeric vehicle and coating the dispersion on a support.

3,684,503

NOVEL ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING ELECTRICALLY CONDUCTING SOLID DISPERSIONS

Wesley D. Humphriss, Cupertino, Calif., and Lawrence C. Bartlett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 818,988, Apr. 24, 1969. This application Jan. 13, 1971, Ser. No. 106,069

Int. Cl. G03g *5/02*

U.S. Cl. 96—1.5 **17 Claims**

A novel electrophotographic element having distributed through a non-recording portion thereof, an electrically conducting solid dispersion, is described. The dispersion extends from an external surface of the element to the electrically conducting layer, providing a novel method for grounding this layer while charging. Typical dispersions are formed from any electrically conducting material dispersed in a polymeric binder in the element.

3,684,504

Patent Not Issued For This Number

3,684,505

METHINE DYE SENSITIZATION OF A DIHYDROQUINOLINE PHOTOCONDUCTOR

Johannes Josephus Vanheertum, Ottersdreef 13, Halle-Zandhoven, Belgium; Theofiel Hubert Ghys, Beukendreef 20, Kontich, Belgium; and Henri Depoorter, Hof van Rietlaan 39, Mortsel, Belgium

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,482

Claims priority, application Great Britain, Mar. 28, 1969, 16,345/69

Int. Cl. G03g *5/00*; G03c *1/00*

U.S. Cl. 96—1.6 **15 Claims**

An organic photoconductive polymer containing recurring nuclei of a dimethyl, dihydroquinoline is spectrally sensitized to the visible region of the spectrum by a methine dye containing at least one indole nucleus.

3,684,506

DIMERIC POLY-N-VINYL CARBAZOLE ORGANIC PHOTOCONDUCTOR AND PHOTOCONDUCTIVE ELEMENTS EMBODYING SAME

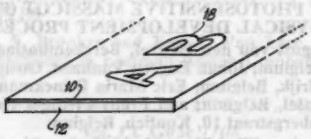
Anthony J. Guarnaccio, 8015 Wisner, Niles, Ill. 60648, and Robert N. Dreyer, Rte. 1, Box 652, Kenosha, Wis. 53140

Continuation-in-part of application Ser. No. 612,432, Jan. 30, 1967. This application Aug. 24, 1970, Ser. No. 66,432

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **15 Claims**



The invention is addressed to the preparation of an electrophotographic element having a photoconductive layer formulated of an organic photoconductor in the form of an alkenyl carbazole dimer and in which the elec-

trophotographic element can be processed for imaging purposes in the conventional manner for electrostatic printing.

3,684,507

DATA STORAGE SYSTEMS

Ronald Francis, Arlington, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Continuation of abandoned application Ser. No. 463,037, June 10, 1965. This application Aug. 12, 1968, Ser. No. 755,015

Int. Cl. G03c *5/04, 5/24*

U.S. Cl. 96—27 **20 Claims**

A data storage medium comprising a support and a radiation sensitive titanium dioxide, the titanium dioxide having been heated at an elevated temperature and for a time period sufficient to increase the photographic speed thereof. Preferably, the titanium dioxide has been heated to a temperature of at least 200° C. for a time period of at least 0.5 hour. This copy medium can then be exposed to establish an image pattern and if desired, contacted with suitable image forming material to establish a permanent image.

Preferred image forming materials comprise a liquid redox system such as a solution of metal ions.

3,684,508

SILVER COMPLEX DIFFUSION TRANSFER PROCESS

Emiel Alexander Hofman, Mayerlei 218, and Camille Angelina Vandeputte, Molenler 100, both of Mortsel, Belgium

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,418

Claims priority, application Great Britain, Mar. 1, 1968, 10,197/68

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **20 Claims**

In a diffusion transfer copying process using a unitary copying material having an external silver halide emulsion layer and an image-receiving layer on a common support, removal of the emulsion layer from the developed image layer by simple washing is facilitated by providing a natural or synthetic macro molecular carbohydrate compound having a number of pairs of cis-hydroxyl groups thereon as the essential binding agent of the emulsion layer or of a supplemental layer intermediate the emulsion layer and image-receiving layer, and carrying out the diffusion transfer treatment of the material after imagewise exposure with an aqueous alkaline processing liquid in the presence of borate anions which cross-link with the macro molecular carbohydrate to form a pH-reversible gel which is insoluble in an alkaline solution but becomes at least substantially soluble in a nonalkaline solution.

3,684,509

USE OF PHOTOSENSITIVE MASSICOT (PbO) IN PHYSICAL DEVELOPMENT PROCESS

Walter August van den Heuvel, Berchemboslaan 1, Berchem, Belgium; Johan Eugeen Vanhalst, Oosterveldlaan 119, Wilrijk, Belgium; Eric Maria Brinckman, Rietveld 12, Mortsel, Belgium; and Frans Clement Heugebaert, Pronkenbergstraat 10, Kontich, Belgium

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,067

Claims priority, application Great Britain, Nov. 12, 1968, 53,671/68

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **22 Claims**

Photosensitive image formation by imagewise exposure and physical development wherein the photosensitive medium contains photosensitive lead oxide with at least 25% thereof being yellow lead oxide having an orthorhombic crystalline structure (massicot) and in admixture therewith a chemical sensitizing agent which is either an organic polyfunctional compound having at least two hydroxy, mercapto or non-tertiary amino groups or a sulphur compound or a selenium or tellurium analog thereof and which possesses reducing properties and/or contains a releasable sulphur, selenium or tellurium atom.

3,684,510

LIGHT SENSITIVE MATERIAL COMPRISING INDOLYLMETHANE DERIVATIVES AND TETRABROMOMETHANE

Hubertus Psaar, Walter Puschel, and Roderich Raue, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

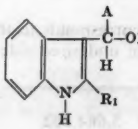
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,119

Claims priority, application Germany, Sept. 11, 1969, P 19 58 709.8

Int. Cl. G03c *1/72, 5/24*

U.S. Cl. 96—48 R **8 Claims**

A mixture of (1) an indolyl methane compound of the formula



in which

A is aryl or a heterocyclic aromatic group and
R_1 and R_2 are H, alkyl or aralkyl,

(2) an aryl amino compound and (3) a tetrahalomethane compound can be used for the production of copies.

3,684,511

METHOD OF FORMING VESICULAR IMAGES WITH PEROXIDASE ACTIVE, IODIDE IONS GENERATING COMPOUNDS

Edith Weyde, Kurten, and Erwin Ranz and Reinhart Matejec, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,573

Claims priority, application Germany, Dec. 5, 1969, P 19 61 029.8

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **11 Claims**

Catalase-active and/or peroxydase-active compounds are produced imagewise in a layer by exposing a layer which contains compounds capable of splitting off iodine or iodine ions upon exposure to actinic light, the visible image being formed by decomposition of peroxide compounds by the said catalase-active or peroxylase-active compounds.

3,684,512

PHOTOGRAPHIC MONOBATHS

William J. Cain, Fairport, and Paul E. Crough, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,592

Int. Cl. G03c *5/30, 5/38*

U.S. Cl. 96—61 M **6 Claims**

Photographic papers normally exhibit objectionable post-processing curl, that is curl after processing and

drying. A monobath which reduces curl contains a silver halide solvent, silver halide developing agent, alkali, a polyethylene oxide, sorbitol and diethanolamine.

3,684,513

COLOR PHOTOGRAPHIC SILVER DYE BLEACH MATERIAL CONTAINING AZO DYES WITH ACYL BLOCKED AUXOCHROMIC GROUPS

Willibald Pelz, Opladen, Karlheinz Kabitzke, Cologne-Buchheim, Karl-Heinz Freytag, Leverkusen, Hans Vetter and Justus Danhauser, Cologne-Stammheim, and Erich Bockly, Leverkusen-Steinbuchel, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,244

Claims priority, application Germany, Mar. 16, 1968, P 16 22 916.6

Int. Cl. G03c *1/10*

U.S. Cl. 96—99 **2 Claims**

A silver dye bleach photographic emulsion sensitive to a primary color is dyed with a diffusion-resistant azo dye that has an auxochromic group which gives the dye an absorption maximum in that primary color but which group is blocked by substitution with a blocking substituent that shifts that maximum away from said color and is readily saponified during silver dye bleach processing.

3,684,514

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSIONS

Masakuni Iwama, Isaburo Inoue, Mitsuto Fujiwara, Teruo Hanzawa, Tamotsu Kojima, Toshihiko Yamamoto, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

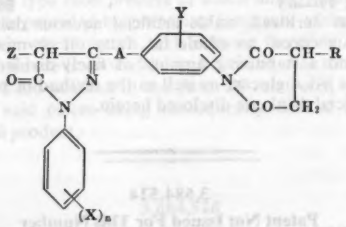
No Drawing. Filed Feb. 3, 1970, Ser. No. 8,444

Claims priority, application Japan, Feb. 6, 1969, 44/8,433

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **6 Claims**

A new compound of the general formula



wherein:

R is an alkyl group having 8–18 carbon atoms or an alkenyl group,
A is —NHCO— or —NH—,
X is halogen atom or a methyl, alkoxy, aryloxy or alkoxycarbonyl group.
n is an integer of 1 to 3,
Y is a hydrogen or halogen atom, and
Z is a hydrogen atom or an arylazo group

is found to be useful as a magenta-forming color coupler for light-sensitive silver halide emulsions in color photography. The coupler shows good solubility in high boiling solvents and forms a dye image having suitable absorption for color photography.

3,684,515

COLOR PHOTOGRAPHIC MATERIAL

Walter Schulte, Opladen, Immo Boie, Cologne, Helmut Mader, Odenthal-Hahnenberg, and Rigobert Otto, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

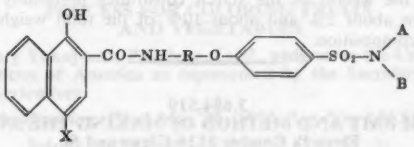
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,255

Claims priority, appplication Germany, Sept. 2, 1969, P 19 44 440.7

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **3 Claims**

Cyan-forming coupler of the following formula



wherein

X is hydrogen, halogen or sulfo,
R is a hydrocarbon chain, and
A and B are hydrogen, alkyl, cycloalkyl, aralkyl or aryl or together complete a teterocyclic ring,

yield on color-forming development cyan dyes with high transmission for blue light and high stability to moist heat. The couplers can be used in combination with red masking couplers.

3,684,516

PHOTO-SENSITIVE RESIN COMPOSITION

Masahito Ishii, Tokyo, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,483

Claims priority, application Japan, Oct. 17, 1969, 44/82,572

Int. Cl. C03c *1/68*

U.S. Cl. 96—115 R **2 Claims**

A photo-sensitive resin composition comprising an alcohol soluble polyamide resin combined with a salt of acrylic acid or methacrylic acid and acrylamide as the photo-sensitive crosslinking agent is extremely suitable for utilizing as the printing plate.

3,684,517

PHOTOGRAPHIC EMULSION CONTAINING NEW BENZIMIDAZOLE COMPOUNDS AS SENSITIZING DYES

Leslie G. S. Brooker and Earl J. Van Lare, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,328

Int. Cl. G03c *1/08*

U.S. Cl. 96—128 **12 Claims**

New polymethine dyes of the cyanine and merocyanine types derived from new 2-methylbenzimidazole derivatives substituted on one of the ring nitrogen atoms by a 2-thiazolyl group or derivatives thereof and photographic silver halide emulsions sensitized therewith.

3,684,518

AQUEOUS SUSPENSION RUMINANT FEED COMPOSITION

Joseph S. Wortham, Morris County, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,137
Int. Cl. A23k *1/02, 1/22*
U.S. Cl. 99—2 N 1 Claim

Aqueous suspension ruminant feed supplements resistant to sedimentation and formation of large crystals and solid aggregates are formulated to comprise a water-soluble polyphosphate and a colloidal dispersion of starch granules. The ratio of the weight of the polyphosphate (expressed as P_2O_5) to the weight of the starch is preferably between about 0.2 and about 2 and the sum of the weight of the polyphosphate (expressed as P_2O_5) and the weight of the starch constitutes preferably between about 2% and about 10% of the total weight of the composition.

3,684,519

FISH BAIT AND METHOD OF MAKING THE SAME

Elvey S. Combs, 3136 Glenwood St., Eureka, Calif. 95501

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,831
Int. Cl. A23k *1/18*
U.S. Cl. 99—3 7 Claims

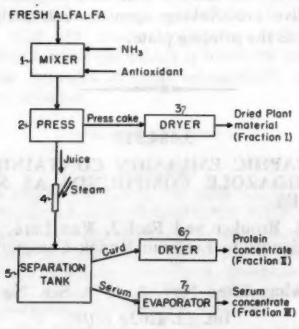
A fish bait made of comminuted organic tissue particles dispersed in a solidified polyacrylamide gel. When stored out of contact with water, the gel tightly compacts around the tissue particles and prevents biological degradation of of tissue. When immersed in water the gel swells to allow bacterial action to take place in the tissue. The tissue odor is released through the surrounding gel in the same manner as from tissue alone, and the gel protects the tissue from decomposition.

3,684,520

FRACTIONATION OF LEAFY GREEN CROPS

Emanuel M. Bickoff, Berkeley, Roland R. Spencer, Pleasant Hill, and George O. Kohler, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Dec. 9, 1969, Ser. No. 883,544
Int. Cl. A23k *1/14, 3/02*
U.S. Cl. 99—8 7 Claims



Processes for fractionating alfalfa and other leafy green crops to provide products useful in animal feeding. Example: Fresh green alfalfa—preferably pretreated with ammonia and an antioxidant such as ethoxyquin—is pressed, yielding a press cake and a juice. The former is dried; the latter is further treated as by heating with incorporation of a fixed gas, yielding a curd rich in proteins and carotenoids.

3,684,521

METHOD OF MAKING AN EXTRUDED EXPANDED PROTEIN PRODUCT

Martin Glicksman, 229 Valley Road, Valley Cottage, N.Y. 10989; Robert E. Klose, 9 Brookhill Drive, West Nyack, N.Y. 10994; and Richard D. Kirkeby, 82 Hudson Ave., Irvington, N.Y. 10533

No Drawing. Filed Feb. 9, 1970, Ser. No. 10,020
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 4 Claims

An expanded protein material for food use is made by preparing a mix containing a proteinaceous material, water and magnesium oxide and/or calcium oxide, wherein the mix is subjected to elevated temperature and pressure followed by a sudden release of pressure to expand the proteinaceous mixture.

3,684,522

PROCESS OF PREPARING FIBROUS PROTEIN PRODUCTS

Charles A. Anker, 127 Rustic Lodge Ave. 55409, and Phyllis I. Burchill, 7316 Cedar Lake Road 55426, both of Minneapolis, Minn.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,197
Int. Cl. A23j *1/10, 1/14*
U.S. Cl. 99—17 18 Claims

Fibrous protein products are prepared by extruding plastic masses comprising keratin protein directly into a gaseous medium and then elongating the resulting extrudate. The products are edible and serve as substitutes for natural meats.

3,684,523

HEAT STERILIZED, STABLE AQUEOUS DAIRY DRINK

Emanuel J. McGinley, 9 Colesbery Drive, Penn Acres, New Castle, Del. 19720, and Joseph M. Zuban, 2595 Wickersham Lane, Chester, Pa. 19014

No Drawing. Filed Feb. 4, 1970, Ser. No. 8,735
Int. Cl. A23c *9/10;* A23g *1/00*
U.S. Cl. 99—63 10 Claims

A heat sterilized, stable artificial aqueous dairy drink containing cocoa, an edible fat, fatty oil or mixtures of these, and a stabilizing amount of finely-divided, water-insoluble β-1,4 glucan, as well as the method of preparing the artificial drink are disclosed herein.

3,684,524

Patent Not Issued For This Number

3,684,525

METHOD OF PRODUCING PASTRY FROM DOUGHS OF LOW WATER CONTENT

Ernstgeorg Albert Hanssen, Hannover, Germany, assignor to Werner Bahlsen, Hannover, Germany

No Drawing. Filed Feb. 9, 1970, Ser. No. 10,014
Claims priority, application Germany, Feb. 12, 1969, P 19 06 930.8
Int. Cl. A21d *8/04, 13/08*
U.S. Cl. 99—92 3 Claims

Pastry is manufactured from doughs of 12 to 18% water content using osmophile yeast as the principal raising agent.

3,684,526

METHOD FOR CONTROLLING MOISTURE IN FLOUR

George M. Lowery, 10270 SW. Katherine St., Tigard, Oreg. 97223

Filed Apr. 30, 1970, Ser. No. 33,340

Int. Cl. A21d 2/00

U.S. Cl. 99—93 6 Claims

Uniform moisture control in flour is achieved by introducing flour and air under pressure into the top of a vertically elongated cylindrical bin in a manner to disperse the flour uniformly across the entire cross section thereof, the flour thereafter being permitted to fall downwardly through the bin under the force of gravity. A controlled amount of water in the form of an atomized mist is introduced axially of the bin at a point below the level at which the flour is introduced. The flour and the mist are permitted to fall together to the bottom of the bin, whereby the individual granules of flour can absorb the water without any change in their physical appearance and without the formation of any particles of dough.

3,684,527

PROCESS FOR PRODUCING A CHIP-TYPE FOOD PRODUCT

H. Paul Walter, Cambridge, Md., assignor to the United States of America as represented by the United States Department of Commerce, Economic Development Administration

No Drawing. Continuation-in-part of application Ser. No. 848,362, Aug. 7, 1969, which is a continuation-in-part of application Ser. No. 737,804, June 18, 1968, which in turn is a continuation-in-part of application Ser. No. 670,792, Sept. 26, 1967, which in its turn is a continuation-in-part of application Ser. No. 529,948, Feb. 25, 1966, which in its turn is a continuation-in-part of application Ser. No. 311,662, Sept. 26, 1963, which in its turn is a continuation-in-part of application Ser. No. 107,914, May 5, 1961. This application June 30, 1970, Ser. No. 51,334

Int. Cl. A22c 25/00; A23l 1/00, 1/33

U.S. Cl. 99—111 4 Claims

A chip type food product of much improved flavor and texture is provided by preparing a mixture of ingredients, including wheat starch and a basic flavoring material, which mixture is cooked in such a manner as to obtain an intermediate product in the form of relatively small thin pieces, said pieces being subsequently cooked to obtain the final product.

3,684,528

FAST SETTING MARSHMALLOW TYPE CONFECTION

Robert William Batey, Port Chester, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

No Drawing. Filed May 28, 1970, Ser. No. 41,640

Int. Cl. A23g 3/00

U.S. Cl. 99—134 A 10 Claims

A fast setting confectionery cream useful in preparing marshmallows, containing shortening, sugar, water, gelatin, flavoring and non-fat milk solids. The bulk density is comparable to slab marshmallow and requires no cooking.

3,684,529

SWEETENING COMPOSITIONS

James J. Liggett, Libertyville, Ill., assignor to William E. Hoerres, Sheboygan, Wis.

No Drawing. Filed June 5, 1970, Ser. No. 43,985

Int. Cl. A23l 1/26

U.S. Cl. 99—141 A 9 Claims

The invention relates to artificial sweetening compositions of saccharin plus glucono delta lactone and sodium gluconate in specified proportions.

3,684,530

PROCESS FOR COLORING FRUITS AND VEGETABLES

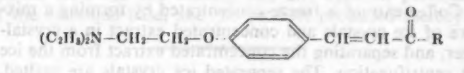
Henry Yokoyama, Pasadena, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 25, 1971, Ser. No. 146,810

Int. Cl. A23b 7/00; A23l 1/27; C07c 93/06

U.S. Cl. 99—168 12 Claims

The color of fruits and vegetables is enhanced by applying thereto a compound of the structure



(where R is a lower alkyl, phenyl, hydroxyphenyl, etc.) which causes accumulation of lycopene in the tissues of the treated produce.

The stated compound is applied to the produce in admixture with a wax carrier or in an aqueous solution.

3,684,531

METHOD FOR PROCESSING EGGS

Robert D. Foster, 202 Womble, Camden, Ark. 71701

No Drawing. Continuation-in-part of application Ser. No. 846,218, July 30, 1969. This application May 4, 1970, Ser. No. 34,525

Int. Cl. A23b 3/06

U.S. Cl. 99—196 10 Claims

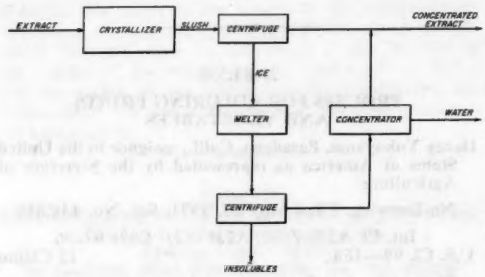
A method for processing hard cooked eggs preparatory to packing, shipment and sale which includes the steps of initially hard cooking the eggs by contact with boiling water, then chilling the eggs to a temperature of from about 20° F. to about 80° F. The eggs are then moved into a cold zone where they are maintained at a temperature which is preferably below 0° F. for a period sufficient to freeze the egg from the shell inwardly for a distance of up to about ¼ inch. While the membrane or white is maintained in the peripherally frozen state described, the eggs are moved into a mechanical vibrator or cracking structure which cracks the shells of the eggs over the entire external periphery of the egg. The eggs are then moved to a shell removal zone where a liquid is jetted against the cracked shell to remove the shell from the egg. Preferably, a saline solution containing 25 to 30 weight percent salt, or a chlorinated solution is utilized for the shell removal step. Following removal of the shell, the eggs may be pickled or placed in any suitable preservative for canning or storage and shipment.

3,684,532

METHOD OF REDUCING SOLID LOSSES IN FREEZE-CONCENTRATION OF COFFEE EXTRACT

Martin Gottesman, 17 Heather Drive, Suffern, N.Y. 10901, and Fredric Davis Pascal, 131—11 Kew Gardens Road, Kew Gardens, N.Y. 11415

Filed Jan. 27, 1969, Ser. No. 794,380
Int. Cl. A23f *1/08*
U.S. Cl. 99—199 9 Claims



Coffee extract is freeze-concentrated by forming a mixture of ice crystals and concentrated extract in a crystallizer, and separating the concentrated extract from the ice by centrifugation. The separated ice crystals are melted, the melted ice stream is centrifuged to remove undesirable waxes and sediment, and the clarified and melted ice is concentrated and then added back to the concentrated extract stream.

3,684,533

SCREEN PRINTABLE SOLDER COMPOSITIONS

Joel A. Conwicke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 880,940, Nov. 28, 1969, which is a continuation-in-part of application Ser. No. 853,195, Aug. 26, 1969. This application May 28, 1970, Ser. No. 41,609
Int. Cl. C09d *5/24*
U.S. Cl. 106—1 9 Claims

Novel liquid vehicles comprising an active hydrogen-containing compound which is capable of removing surface oxides from soldering metals, rosen (or derivatives thereof) and, optionally, an organic solvent and a thixotropic agent. These vehicles are used to form screen printable solder compositions which contain finely divided solder metals dispersed in the vehicle. The use of this novel vehicle provides good screen printability, good solder flowability at soldering temperatures, and also aids in the formation of good solder bonds. These compositions are particularly suited for soldering electronic circuitry.

3,684,534

METHOD FOR STABILIZING PALLADIUM CONTAINING SOLUTIONS

William E. Emerson, Grand Island, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed July 6, 1970, Ser. No. 52,715
Int. Cl. C23c *3/00*
U.S. Cl. 106—1 2 Claims

An organic solvent solution of a palladium salt or complexes thereof is stabilized by the addition of a stabilizing amount of a stabilizer composition selected from copper chloride, and mixtures thereof. The resulting solution is suitable for use as a treating solution for the metal plating of plastics and related processes.

3,684,535

Patent Not Issued For This Number

3,684,536

BISMUTHATE GLASS-CERAMIC PRECURSOR COMPOSITIONS

Lewis Charles Hoffman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,986
Int. Cl. C03c *3/04, 3/10, 5/02*
U.S. Cl. 106—53 2 Claims

Bismuthate glass-ceramic precursors which are glass frit compositions and which are useful in forming printed circuit metallizations exhibiting excellent adhesion of metallization to ceramic substrate. Metallizing compositions for screen printing circuits onto ceramic substrates which consist essentially of, by weight, (a) 3–15% of a finely divided powder of such glass-ceramic precursors as a binder and (b) 85–97% of a finely divided noble metal powder. Dielectric ceramic substrates having printed and fired thereon such metallizing compositions.

3,684,537

NICKEL-BASE METALLOCERAMIC STRENGTHENING MATERIAL

Olga Evgenievna Kestner, ulitsa Baimana 43/15, kv. 12; Alexei Sergeevich Frolov, Izmailovsky prospekt 119, kv. 23; Vasily Ivanovich Vinokurov, Spartakovskaya ulitsa 20/34, kv. 39; Mikhail Georgievich Trofimov, 9 ulitsa Sokolinogory 1, kv. 18; Roza Fedorovna Kostechko, 13 Parkovaya ulitsa 31, korpus 1, kv. 92; Valentin Nikiforovich Pyanov, Zavodskaya ulitsa 17, kv. 37; Jury Ivanovich Golovkin, 13 Parkovaya ulitsa 13, korpus 1, kv. 18; Vladimir Borisovich Abakumov, 7 Novo-Ostankinsky Proezd 3/3, kv. 5; and Anatoly Alexeevich Shagurin, Izmailovsky bulvar 31/14, kv. 48, all of Moscow, U.S.S.R.; and Vladimir Alexeevich Lotarev, Zaporozhie, ulitsa Uralskaya 3; Anatoly Alexeevich Yakovlev, Zaporozhie ulitsa 8, Marta 66, kv. 12; Vyacheslav Sergeevich Popov, Zaporozhie, ulitsa Lermontova 19, kv. 28; and Zinaida Sergeevna Narogskaya, Zaporozhie, ulitsa karpenko-karogo 13, kv. 70, all of Zaporozhie, U.S.S.R.

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,975
Int. Cl. C04b *35/52*
U.S. Cl. 106—56 1 Claim

A nickel-base metalloceramic sealing material, whose composition comprises nickel, copper, boron nitride, graphite and sodium silicate and operating under conditions of being exposed to the action of a high-temperature gas flow.

3,684,538

PRODUCTION OF SILICA BRICK

Edmund S. Wright, Clearfield, Pa., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1970, Ser. No. 84,736
Int. Cl. C04b *35/14*
U.S. Cl. 106—63 8 Claims

An improved method for producing a silica refractory of size-graded silica and a mineralizer. The improvement consists of introducing into the brick or grain calcium chloride or calcium nitrate dissolved in a tempering liquid as a replacement for part of the mineralizer. Excessive absorption of moisture is prevented prior to firing, and sealing of the brick pores during drying is prevented when calcium chloride is substituted for part of the mineralizer.

3,684,539

METHOD OF ADDING OXYGEN CONTAINING METALLIC COMPOUNDS TO A MOLTEN METALLURGICAL SLAG

George A. Bartholomew, 122 Yorkshire Road, Pittsburgh, Pa. 15238

Continuation-in-part of application Ser. No. 632,859, Feb. 21, 1967, which is a continuation-in-part of application Ser. No. 557,854, May 18, 1966, which in turn is a continuation-in-part of application Ser. No. 286,084, June 6, 1963. This application Dec. 10, 1969, Ser. No. 883,994

Int. Cl. C04b 7/14

U.S. Cl. 106—117 8 Claims

A method of adding compounds containing metals and oxygen to molten metallurgical slag wherein the compounds carried in combustion oxygen are introduced beneath the surface of a body of molten slag and fuel is separately introduced into the slag with the fuel and oxygen completely burning beneath the slag to maintain it molten.

3,684,540

FREEZING-MIXING PROCESS

William E. Henderson, 6411 Lane Court, and Camilla B. Ross, 5502 S. Madison St., both of Hinsdale, Ill. 60521

Application Sept. 14, 1967, Ser. No. 667,849, which is a continuation of application Ser. No. 414,969, Dec. 1, 1964. Divided and this application Dec. 24, 1970, Ser. No. 101,376

Int. Cl. C08b 21/00

U.S. Cl. 106—164 6 Claims

Materials which are normally reactive with each other can be mixed together in particulate form when one of the normally reactive materials is first rendered inactive by freezing. A uniform blend of the materials can then be obtained and the frozen component of the blend can subsequently be thawed and the materials be permitted to react with each other.

3,684,541

Patent Not Issued For This Number

3,684,542

PIGMENT PREPARATIONS TO BE USED IN NON-AQUEOUS SYSTEMS AND PROCESS FOR THEIR MANUFACTURE

Hartmut Gossel, Kriftel, Taunus, Kurt Merkle, Kelkheim, Taunus, Ferdinand Memmel, Frankfurt am Main, and Erwin Janousch, Camberg, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

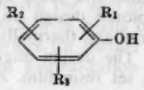
No Drawing. Continuation-in-part of application Ser. No. 756,388, Aug. 30, 1968. This application Dec. 9, 1970, Ser. No. 96,603

Claims priority, application Germany, Sept. 4, 1967, F 53,397

Int. Cl. C08h 17/04

U.S. Cl. 106—308 Q 3 Claims

Pigment dispersions consisting of a finely distributed inorganc pigment dyestuff in a dispersing medium suitable for being used in non-aqueous systems, wherein the dispersing medium consists of compounds of the general formula



wherein R_1 represents an alkyl radical with 4 to 18 carbon atoms, and R_2 and R_3 are hydrogen atoms or alkyl groups containing from 1 to 18 carbon atoms, the alkyl groups being straight-chained or branched, or a mixture thereof, and a process for their manufacture.

3,684,543

RECOATING OF ELECTRODES

Vittorio de Nora, Nassau, Bahama Islands, Lewis M. Meyer, Painesville, Ohio, and Alexander L. Barbato, deceased, late of Perry, Ohio, by Patricia J. Barbato, executrix, Perry, Ohio, assignors to Electronor Corporation, Panama, Panama

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,218

Int. Cl. B44d 1/18; B23p 7/00

U.S. Cl. 117—2 R 9 Claims

Describes a method of recoating a previously used dimensionally stable electrode having a previously applied conductive electrocatalytic coating thereon which comprises cleaning the previously used electrode without stripping the old coating therefrom and recoating the cleaned electrode with a new conductive electrocatalytic coating applied over the old coating and any exposed portions of the electrode base, and the product produced thereby.

3,684,544

PROCESS FOR MAKING A DRY TRANSFER MATERIAL

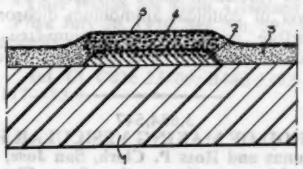
Jean Gustave Jules Piron, 360D, Boulevard Emile Bockstael, Brussels 2, Belgium

Filed Feb. 7, 1969, Ser. No. 797,505

Claims priority, application Belgium, June 21, 1968, 716,069

Int. Cl. B41m 3/12

U.S. Cl. 117—3.1 4 Claims



In a dry transfer material comprising a support, ink signs and a pressure-sensitive adhesive layer covering both the ink signs and the parts of the support without ink signs, the adhesive layer has on its free surface a layer of fine solid particles such that the adhesive cannot act unless a sufficient pressure is applied during a sufficient period of time to allow the adhesive to pass through the particle layer and to cause the ink signs to be transferred to adhere to a receptor surface. The ink signs contain a non-volatile liquid material capable of oozing into the adhesive layer so as to reduce the viscosity of the latter.

3,684,545

THERMOSETTING DRY TRANSFER

James D. Worrall, Newark, Del. (Kaumagraph Company, 14th and Poplar St., Wilmington, Del. 19899)

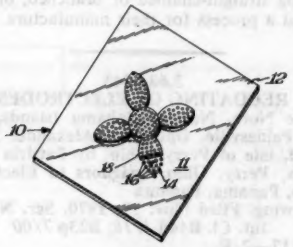
Filed Nov. 7, 1969, Ser. No. 874,906

Int. Cl. C09j 7/02

U.S. Cl. 117—3.4 19 Claims

A colored design is applied upon a high release carrier sheet, such as paper coated with a high release agent. A

resin film layer incorporating a combination of a mixture of blocked polyurethane and vinyl copolymer resins is deposited over the colored design on the carrier sheet. The design is transferred and thermally set by application of heat and pressure. The design migrates within and is protected by the heat set resin film. An additional resin layer such as a pigmented thermoplastic plastisol, may be deposited on the transfer over the design-covering layer



to provide a suitable background for the design and/or increased transfer characteristics. The resin film layer may comprise a pair of layers with the upper layer being the same as the above identified blocked and substantially uncured single layer resin film and a partially cured resin film layer of similar composition being inserted under it. This composite system permits a design having superior abrasion and heat resistance to be applied to materials with extreme rapidity.

3,684,546

METHOD OF TREATING LUMINESCENT RARE EARTH OXIDE MATERIALS

Michael J. Hammond and Raymond F. Herner, Towanda, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,760
Int. Cl. C03c *17/10*; H01j *1/64*
U.S. Cl. 117—33.5 C **3 Claims**

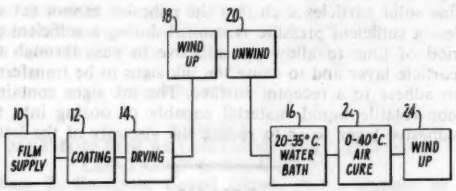
Disclosed is a method for preventing chromium contamination of rare-earth oxide phosphors by forming a uniform layer of colloidal ammonium dichromate on a substrate before applying a chromium-free slurry of rare-earth oxide phosphor in an organic binder to the substrate.

3,684,547

METHOD OF MAKING VESICULAR FILM

Gary L. Bunas and Ross P. Clark, San Jose, Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Apr. 10, 1970, Ser. No. 27,305
Int. Cl. C03c *3/26*; G03c *1/54*
U.S. Cl. 117—34 **1 Claim**



A method of making vesicular film comprising drying a solution of a diazonium salt and polyvinyl formal onto a flexible substrate, passing the coated substrate through a water bath at 20° to 35° C., removing surface water from the film, and then passing the coated substrate through air at 0° to 40° C. for at least thirty seconds before winding the finished film.

3,684,548

METHOD OF PREPARING A HOMOGENEOUS DYE-SENSITIZED ELECTROPHOTOGRAPHIC ELEMENT

Lawrence E. Contois, Webster, N.Y.
(Kodak Park Works, Rochester, N.Y. 14650)

Filed June 30, 1970, Ser. No. 51,252
Int. Cl. G03g *5/06*
U.S. Cl. 117—34 **14 Claims**

A process is described for the dye sensitization of electrophotographic elements. The dye is concentrated in a thin layer by preferential absorption from the photoconductive layer into a subbing layer having a greater affinity for the dye.

3,684,549

PRESSURE SENSITIVE TRANSFER COATING

Joseph L. Shank, 4110 206th St., Matteson, Ill. 60443

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,209
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **11 Claims**

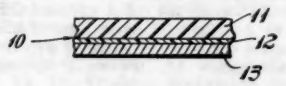
The invention provides a record material sensitized with acidic electron acceptors and a dye transfer layer comprising a leucoauramine dye homogeneously distributed throughout an inert hot melt layer plasticized such that the dye can be easily transferred to the acidic electron acceptor layer for marking without transfer of the hot melt.

3,684,550

TRANSFER ELEMENT AND PROCESS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,818
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **8 Claims**



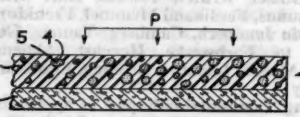
Pressure-sensitive transfer elements having an oleophilic polyolefin film foundation and an oleous wax transfer layer which normally has a high affinity for said film foundation, characterized by the interposition of a thin, non-oleophilic layer between said film foundation and said transfer layer.

3,684,551

METHOD OF PRODUCING PRESSURE SENSITIVE COPYING SHEETS

Jerome A. Seiner, 5415 Plainfield St., Pittsburgh, Pa. 15217

Filed Apr. 15, 1970, Ser. No. 28,727
Int. Cl. B41m *5/16*
U.S. Cl. 117—36.7 **6 Claims**



Disclosed herein are various films containing minute droplets of an entrapped and preferably volatilizable liquid which is a non-solvent for the polymeric material of the film matrix. Upon the application of pressure, as by a typewriter key, to the film, the cells of the film which contain the droplets of liquid non-solvent are ruptured in

the area of pressure. This rupturing enables the liquid non-solvent to escape, and renders the films opaque in the area of rupture and release of non-solvent. Such films are useful, for example, as coatings on typewriter or other printing paper.

3,684,552

HEAT-SENSITIVE SHEET MATERIAL

Joseph A. Wiese, Jr., and George Van Dyke Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,117
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 **5 Claims**

Colored sheet material, preferably in clear film form, contains an amine-reactive dye and a tetralkylammonium cyanoacetate salt dissolved in a binder. When subjected to a thermographically induced heat-pattern the color is permanently diminished or destroyed, producing a visible image and, when using the preferred film product, a negative projection transparency.

3,684,553

PROCESS FOR REMOVING SURFACE DEFECTS FROM ARTICLES HAVING A THERMOPLASTIC SURFACE

John W. Van Dyk, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 733,276, May 31, 1968. This application Dec. 14, 1970, Ser. No. 98,049
Int. Cl. B44d *1/44;* B23p *7/00*
U.S. Cl. 117—63 **6 Claims**

A process for treating an article that has an essentially thermoplastic polymer surface to remove defects from the surface which comprises:

(1) Exposing the polymer surface of the article to a partial pressure of a viscosity reducing vapor for the polymer; and

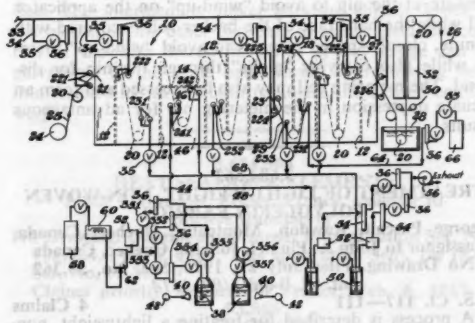
(2) Absorbing sufficient vapor into the polymer surface of the article to reduce the viscosity of the polymer to allow the polymer to flow to form a smooth even surface.

3,684,554

METHOD FOR THE VAPOR PHASE SURFACE SULFONATION OF PLASTIC WEBS

Harold J. Donald, 2612 Oxford Drive, Midland, Mich. 48640; Carl E. Dewald, 1306 Wallen, Findlay, Ohio 45840; and Robert J. Caiola, 452 S. 7th St., Saginaw, Mich. 48006

Filed June 2, 1969, Ser. No. 829,453
Int. Cl. B44d *1/092;* C07b *13/00*
U.S. Cl. 117—47 A **12 Claims**



A process and apparatus for the rapid vapor phase sulfonation of plastic webs wherein the plastic web is treated with a blast of gaseous sulfur trioxide. Optional steps include predrying the web and scrubbing it free of excess sulfur trioxide with blasts of dry inert gases. The invention also provides for further treatment of the plastic web with fluid neutralization agents or metal salt solutions.

3,684,555

Patent Not Issued For This Number

3,684,556

PROCESS FOR THE PRODUCTION OF A FLEXIBLE SYNTHETIC, GAS-PERMEABLE, MULTILAYER SHEET MATERIAL HAVING A NAPPED OUTER SURFACE

Hans Mahl, Wiesbaden, and Heinrich Lind, Diedenbergen, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 10, 1970, Ser. No. 62,483
Claims priority, application Germany, Aug. 11, 1969, P 19 40 772.8
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **7 Claims**

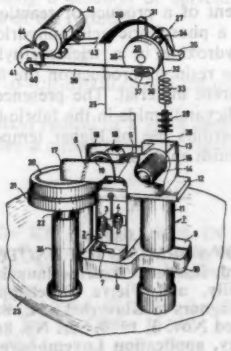
This invention relates to a process for the production of a flexible, gas-permeable, multilayer sheet material, and to the material so produced, which process comprises applying a liquid layer of a solution containing up to 28 percent by weight of polyurethane in an organic solvent miscible with water to one surface of a fibrous sheet material, applying a liquid precipitating agent to the layer at a temperature not in excess of 5° C., washing the resulting coagulated polymer layer, drying and cooling the polymer layer, and grinding the outer surface of the polymer layer.

3,684,557

METHOD FOR VACUUM EVAPORATION OF HIGH MELTING POINT NON-METALLIC MATERIALS

Gerhard Kienel, 13 Odenwaldstrasse, 6451 Mittelbuchen Uber Hanau am Main, Germany

Filed July 30, 1970, Ser. No. 59,536
Claims priority, application Germany, Aug. 13, 1969, P 19 41 215.8
Int. Cl. C03c *23/00;* B44d *1/02*
U.S. Cl. 117—93.3 **3 Claims**



A method of and device for forming coatings of non-metallic materials of high melting point, in vacuo, by the use of an electron beam.

3,684,558

PROCESS OF ENROBING POWDER PARTICLES

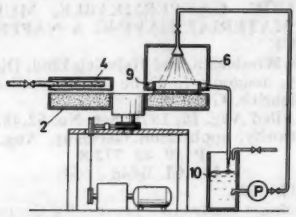
Kinjiro Fujii, Komae-machi, Akihiro Motoe, Higashimurayama-shi, and Homuru Kasugai, Fuchu-shi, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Continuation-in-part of application Ser. No. 795,167, Jan. 30, 1969. This application Feb. 3, 1971, Ser. No. 112,109

Claims priority, application Japan, Feb. 2, 1968, 43/6,049

Int. Cl. B44d *1/08*

U.S. Cl. 117—100 B 5 Claims



Droplets of an aqueous solution or slurry containing a potentially tacky substance are sprayed over a powder bed of a refractory material preheated to about 200° C.–700° C., while precautions are taken to insure that the droplets do not combine. The water in the droplets thus boils on said powder bed, with the result that the tacky substance in the droplets enrobes particles of powder while the water evaporates. The enrobed particles gradually solidify into porous grains.

3,684,559

METHOD OF FLAME-PROOFING CELLULOSIC MATERIALS AND PRODUCT PRODUCED THEREBY

Jay C. Chapin, Chicago, Ill., assignor to Ventron Instruments Corp., Scientific Chemicals Division

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,704

Int. Cl. C09k *3/28;* D06m *13/26*

U.S. Cl. 117—102 R 2 Claims

A method of rendering cellulosic fibers and/or fabric fire resistant and self-extinguishing by attachment to the fibers of a water soluble resinous product which is formed by the treatment of a product of reaction of anhydrous ammonia and a phosphoric acid anhydride with aqueous ammonium hydroxide in a trichlorethylene slurry and heat curing the resinous product on the fibers to a water insoluble adherent material. The presence of 3% to 7% by weight of dicyandiamide in the fabric treating aqueous composition permits use of higher temperatures for the curing of the finish on the fabric.

3,684,560

METHOD OF FORMING REFRACTORY MASSES

Edgar Brichard, Ransart, Maurice Jaupain, Jumet, Emile Plumat, Gilly, and Pierre Deschepper, Marcinelle, Belgium, assignors to Glaverbel S.A., Brussels, Belgium

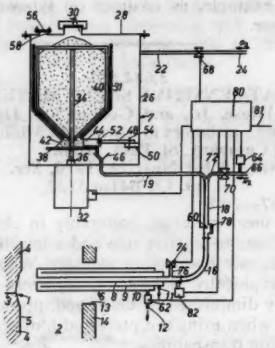
Filed Nov. 3, 1970, Ser. No. 86,532

Claims priority, application Luxembourg, Nov. 4, 1969, 59,745

Int. Cl. B44d *1/00, 1/08*

U.S. Cl. 117—105.1 22 Claims

Method of forming refractory masses, in situ, by applying to selected location a mixture of fine particles of a substance which is capable of undergoing combustion to produce heat and particles of another substance, the substances being of such composition that such heat will cause



the adhesion of the surfaces of the obtained particles, and creating the conditions for producing such combustion.

3,684,561

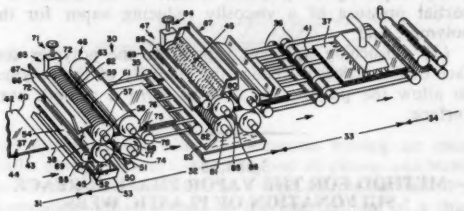
APPARATUS AND METHOD FOR APPLYING HIGH VISCOSITY COATINGS

Raymond A. Labombarde, Lowell Road, Nashua, N.H. 03060

Original application Dec. 15, 1966, Ser. No. 599,283, now Patent No. 3,552,353. Divided and this application Apr. 8, 1970, Ser. No. 31,038

Int. Cl. B05c *1/08*

U.S. Cl. 117—111 R 2 Claims



A method for high speed roll coating application of high viscosity coatings on a succession of individual, advancing, flat, box blanks, especially such blanks of limp paper, without "wind-up" on the rolls and without "globbing" at the roll nip. A resilient rubber coating applicator roll forms a coating nip with a hard faced backer roll and the applicator roll is arcuately deformed by backer roll pressure at the nip to avoid "wind-up" on the applicator roll while the hard face of the backer roll is covered with minute, closely-spaced recesses to avoid "wind-up" thereon while also carrying "globs" through the nip for disposal. The metering roll may also be recessed and form an arcuate depression in the metering nip for advantageous results.

3,684,562

TREATMENT OF LIGHT-WEIGHT, NON-WOVEN POLYOLEFIN FABRICS

George Pascall, Rawdon, Montcalm, Quebec, Canada, assignor to John A. Pinatel, Joliette, Quebec, Canada

No Drawing. Filed July 29, 1970, Ser. No. 59,362

Int. Cl. B44d *1/09, 1/14*

U.S. Cl. 117—111 4 Claims

A process is described for treating a lightweight, nonwoven polyolefin fabric having a weight of about 1–1.3 ounces per square yard to make it receptive to treating agents. To one surface of the fabric there is applied a very

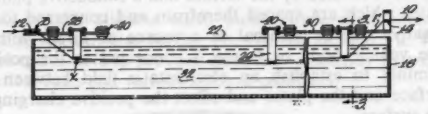
thin layer of a curable composition containing (a) a low curing temperature, flexible polymerizable resin comprising a mixture of vinyl and acrylic type resin lattices which is non-tacky when cured and is receptive to treating agents and (b) a vinyl ether copolymer as an adhesion improver. The composition is applied at a Brookfield viscosity of about 9,000 to 12,000 in an amount of about ½ to 2 ounces of solids per square yard of fabric by means of a screen engraved roller.

3,684,563

GALVANIZING CONTINUOUS ELEMENTS WITH PREVENTION OF CORROSION OF THE PAN

William H. Brown, 6200 S. Adams St., Bartonville, Ill. 61607

Filed Jan. 14, 1971, Ser. No. 106,442
Int. Cl. C23c *1/02*
U.S. Cl. 117—114 A 9 Claims



A method and apparatus for galvanizing steel wire including a corrodible electrically conductive pan containing a zinc bath through which the wire is moved lengthwise and in which the wire is brought to a temperature substantially above the inversion temperature with zinc within the bath, thereby creating current flow toward both the inlet and outlet ends of the bath within the wire. The method and apparatus involves the use of separate short circuits including a first short between the wire at the entry end of the bath and the wire at approximately its position of inversion temperature within the bath and a second short between the wires and the first and second intermediate sinkers, their position being at maximum wire potential in the bath beyond the inversion temperature position. Both of the short circuits are electrically insulated from the pan, thereby eliminating any corrosion-inducing current flow through the pan. The second short circuit also assures an even potential in the wire over a significant length of the bath to assure production of an even coating on the wire.

The bath includes an entry sinker bar which is electrically conductive and forms a portion of the first short circuit and two intermediate sinker bars which form a portion of the second short circuit. The first sinker bar is positioned at approximately the position of inversion temperature within the bath and the intermediate sinker bar are positioned at approximately the position of maximum potential above the inversion temperature position. The intermediate sinker bars are slightly lower in the bath than the other two bars to assure electrical contact of the wire therewith. Wires of any gauge can be galvanized in the same bath simply by regulating their immersion time in the bath to assure the desired coating weight.

3,684,564

HEAT SEALABLE ELEMENTS

Emile Lefrancois, Ecully, France, assignor to Societe Rhodiaceta

No Drawing. Continuation-in-part of application Ser. No. 702,824, Feb. 5, 1968. This application Sept. 14, 1970, Ser. No. 72,109
Claims priority, application France, Feb. 6, 1967, 93,866
Int. Cl. C09j *7/04*
U.S. Cl. 117—122 H 10 Claims

Heat-sealable elements comprising a fibrous support having a coating of a mixture of copolyamide, aminoplast resin, and acid catalyst are useful inter alia in garment manufacture.

3,684,565

METAL COATED WITH VARNISH FILM AND PROCESS FOR PRODUCING SAME

Erich Psencik, Witten-Bommern, Horst Hermsdorf, Gelsenkirchen-Feldmark, and Horst Vltavsky, Mulheim-Saarn, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,966
Claims priority, application Germany, Nov. 8, 1968, P 18 07 776.4
Int. Cl. B32b *27/36, 15/08*
U.S. Cl. 117—132 BF 17 Claims

Fast-to-boiling, sterilizable and highly deformable varnish films are prepared by adding a benzoguanamine resin and a catalyst to an organic solvent solution of a high molecular weight, linear copolyester and forming a film from the resultant mixture. The varnish film is advantageously applied to a metal surface from the solvent solution and then baked thereon at about 100–300° C.

3,684,566

ACYLATED ALCOHOLATES OF POLYVALENT METALS

Friedrich Josten, Rheinkamp-Utfort, and Willi Lücker, Homburg, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,833
Claims priority, application Germany, Jan. 18, 1969, P 19 02 509.3
Int. Cl. D06m *13/50*
U.S. Cl. 117—135.5 4 Claims

Process for rendering fibrous material water-repellent comprising treating the material with an organic solution of the reaction product of an alcoholate of titanium, aluminum, or zirconium, and an alkyl-substituted succinic anhydride or mono ester thereof, said alkyl substituent having at least four carbon atoms.

3,684,567

ANTISTATIC FINISH FOR NYLON

Philip B. Roth, Bridgewater Township, Somerset County, N.J. (8 Copper Hill Road, Somerville, N.J. 08876)

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,405
Int. Cl. B44d *1/44;* B32b *27/34*
U.S. Cl. 117—138.8 N 5 Claims

A process for rendering nylon textiles antistatic, and the composition which is durable to laundering, the composition comprising a solution or solvent dispersion of an ethanolamine of the formula

$$R{-}O{-}CH_2\underset{\displaystyle OH}{\underset{|}{C}}HCH_2NHCH_2CH_2OH$$

where R is an alkyl radical of 8 to 18 carbon atoms. The invention includes a nylon textile so treated.

3,684,568

METHOD OF RELEASING SOIL IN FABRICS

Ralph P. Arthur, Parkersburg, and Mary Joanne Belden, Washington, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed June 17, 1969, Ser. No. 834,135
Int. Cl. D06m *15/08*
U.S. Cl. 117—139.4 6 Claims

A method of releasing soil from resin treated fabrics (durable press, permanent crease, wash and wear, no iron and easy care) by incorporating in, or top finishing the fabric with, up to 25% of a maleic anhydride-conjugated diene copolymer, as the hydrolized free acid, or salts of this copolymer.

3,684,569

PROCESS OF PRODUCING CONDUCTIVE GOLD PATTERNS

Alvin A. Milgram, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 725,493, Apr. 30, 1968. This application Oct. 6, 1970, Ser. No. 78,620

Int. Cl. H05k *1/00*

U.S. Cl. 117—212 5 Claims

Gold patterns are produced by a process which utilizes a combination of steps involving heat and ultraviolet light treatments. The conductive gold patterns can be applied on various insulating substrates, such as glass and various ceramic materials.

3,684,570

Patent Not Issued For This Number

3,684,571

Patent Not Issued For This Number

3,684,572

ELECTROLESS NICKEL PLATING PROCESS FOR NONCONDUCTORS

Kirman Taylor, Painesville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 13, 1970, Ser. No. 54,569

Int. Cl. B44d *5/00*

U.S. Cl. 117—47 A 6 Claims

The use of a quaternary amine surfactant solution in an electroless metal plating process produces a uniform coating on a nonconductor surface and excellent surface coverage.

3,684,573

AGGLOMERATED ANHYDROUS FRUCTOSE AND PROCESS FOR ITS PRODUCTION

Hans Voigt, Georg Stoeck, Werner Gosewinkel, and Theodor Kusch, Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,298

Claims priority, application Germany, Feb. 25, 1969, P 19 09 316.4

U.S. Cl. 127—30 11 Claims

Agglomerated anhydrous fructose which is quick dissolving yet non-hygroscopic, comprising relatively coarse particles in turn composed of agglomerated finer particles, is produced by moistening fine fructose crystals obtained conventionally by recrystallization with from 3 to 10 weight percent, based on the weight of fructose, of a 1 to 4 carbon atom alcohol and with from .03 to 1.5 percent by weight of water, based on the weight of fructose, and drying the moistened fructose at from 40 to 90° C.

3,684,574

METHOD OF PRODUCING SWEET SYRUP BY RESIN ISOMERIZATION OF DEXTROSE SYRUP

Edward Katz, St. Louis, Irving Ehrenthal, University City, and Barrett L. Scallet, Clayton, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Apr. 20, 1970, Ser. No. 29,838

Int. Cl. C13k *9/00*

U.S. Cl. 127—46 A 13 Claims

A line of fructose-containing, water white, ash-free, high DE syrups is made by resin isomerization. The process involves isomerization in equipment consisting of cation-anion exchange resins arranged in a loop. The high dextrose (95%) feed is first passed through a strong base anion resin column and then passed through a strong acid cation column, or the strong acid cation can be first. The output from the acid column is recirculated through the strong base column in a loop arrangement and the procedure is repeated until the desired degree of isomerization is achieved.

3,684,575

USE OF ELECTROSTATIC CHARGE TO REPEL SUBSTANCES FROM SURFACES DURING CLEANING

Arthur S. King, Prairie Village, Kans. (1710 Baltimore Ave., Kansas City, Mo. 64105)

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,604

Int. Cl. B08b *7/04*

U.S. Cl. 134—1 6 Claims

Positively charged dirt particles are cleaned from the surface of a vehicle body by positively charging the surface to electrically repel the particles, the surface then being washed while the charge thereon is positive. A capacitor is formed by the surface and a conductive plate or plates which are spaced therefrom and connected to the negative output terminal of a source of direct voltage. The vehicle body or frame is connected to the positive terminal to establish an electrostatic field between the surface and the plates and effect the positive charging of the surface.

3,684,576

OVEN CLEANING METHOD AND PRODUCT

Howard Eisen, Fair Lawn, N.J., and Joseph A. Feighan, Cheltenham, Pa., assignors to Glamorene Products Corporation, Clifton, N.J.

No Drawing. Continuation of application Ser. No. 619,574, Mar. 1, 1967. This application Jan. 30, 1970, Ser. No. 7,361

Int. Cl. C23g *1/00*

U.S. Cl. 134—2 7 Claims

The application of certain oxidation catalysts to baked-on fat deposits on oven surfaces reduces temperature of complete decomposition. Oven cleaning compositions containing metal acetylacetonates, hopcalite catalysts, sodium carbonate, cobalto-cobaltic oxide, manganese dioxide, platinum metals and compounds of platinum metals, alone and in combination with surface active agents, penetrants and catalyst promoters such as free alkali, are described.

3,684,577

REMOVAL OF CONDUCTIVE COATING FROM DIMENSIONALLY STABLE ELECTRODES

Charles F. Hitzel, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Feb. 24, 1969, Ser. No. 806,343

Int. Cl. C22b *11/00;* C23g *1/28*

U.S. Cl. 134—2 8 Claims

A molten salt bath consisting of an alkali metal hydroxide and an alkali metal salt of an oxidizing agent is used to completely remove the conductive coating from a dimensionally stable electrode.

3,684,578

FUEL CELL WITH ELECTRODES HAVING SPINEL CRYSTAL STRUCTURE

Shoji Makishima, 115, 1-chome, Kamitakaido, Suginami-ku; Hidefumi Hirai, 2122, 4-chome, Kamimeguro, Meguro-ku; Kazuo Tomiie, 4, 5-chome, Aoyama-Minamicho, Akasaka, Minato-ku; and Tetsuichi Kudo, 159 Tamagawa Oyamacho, Setagaya-ku, all of Tokyo, Japan

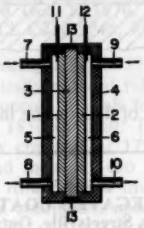
Continuation-in-part of application Ser. No. 566,819, July 21, 1966. This application Oct. 1, 1970, Ser. No. 77,339

Int. Cl. H01m *27/16*

U.S. Cl. 136—86 F 2 Claims

A fuel cell is disclosed for use with high temperature. The cell is composed of electrodes having a spinel crystal

structure made by sintering fine powders onto a solid electrolyte. The fine powders are composed of oxides of at least one metal of variable valency and of oxides of at least one metal selected from the group consisting of



alkali metals, alkaline earth metals, rare earth metals, Zn, Cd, Ag, Al, Ga, In, Sn, Pb, As, Sb, Bi, and Ta. The novel cell is able to produce electricity efficiently by using practical fuels and various kinds of oxidizers.

3,684,579

METHOD OF PRODUCING A TUNGSTEN CARBIDE CONTAINING ELECTRODE FOR FUEL ELEMENTS

Konrad Mund, Heuschlag 20, and Rolf-Winfried Schulte, Lonsweg 3, both of Erlangen, Germany

Filed July 21, 1970, Ser. No. 56,772
Claims priority, application Germany, Aug. 1, 1969, P 19 39 127.6
Int. Cl. H01m *13/04*
U.S. Cl. 136—120 FC **13 Claims**

Process for making a WC containing electrode for fuel cell elements. A silver tungstate is reduced at elevated temperature in a hydrogen atmosphere. It is thereafter carburated. Finally, an electrode is formed of the thus produced silver containing tungsten carbide.

3,684,580

BATTERY SEPARATOR MATERIALS

Michael J. Lysaght, 3 Arizona Terrace, Arlington, Mass. 02174, and Robert W. Hausslein, 21 Prospect Hill Road, Lexington, Mass. 02173

No Drawing. Continuation-in-part of application Ser. No. 732,896, May 29, 1968. This application Aug. 19, 1970, Ser. No. 65,306
Int. Cl. H01m *3/02*
U.S. Cl. 136—146 **14 Claims**

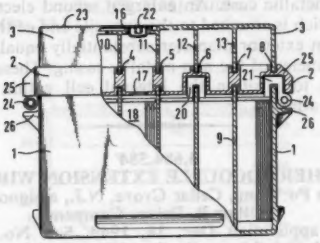
A bibulous polymeric material suitable for use in making separators for silver-zinc batteries, the material being characterized by a very low average pore diameter, advantageously below 300 angstroms, and by a high volume porosity, advantageously above 50%. This material is primarily a copolymer of methacrylic acid and a hydrophobic monomer e.g. styrene or of methacrylic acid and a cross-linking monomer, most advantageously divinyl benzene: an especially advantageous process for making such materials is also disclosed and claimed.

3,684,581

DRY-CHARGED STORAGE BATTERY HAVING AN ELECTROLYTE RESERVOIR AND THE BATTERY CASE COMBINED IN A UNIT

Frédéric Jufer, Motiers, Switzerland, assignor to SIC, Societe Industrielle du Caoutchouc S.A., Fleurier, Switzerland

Filed Feb. 5, 1970, Ser. No. 8,975
Claims priority, application Germany, Feb. 29, 1969, G 69 07 134.7
Int. Cl. H01m *45/00*
U.S. Cl. 136—162 **9 Claims**



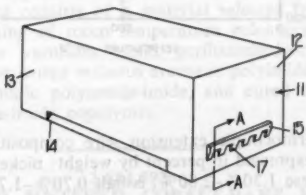
An electrolyte reservoir and the battery proper are combined in a unit.

3,684,582

ELECTRIC STORAGE BATTERIES

Maurice Roberts, 73 Fentham Road, Hampton-in-Arden, Warwickshire, England

Filed Aug. 25, 1970, Ser. No. 66,700
Int. Cl. H01m *1/04*
U.S. Cl. 136—166 **4 Claims**

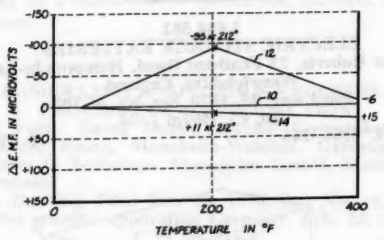


A method of providing mounting means and/or lifting means on the external wall of a battery box comprises starting with a moulded mounting or lifting member which is formed with a peripheral skirt extending from the surface thereof to be presented to the battery box and with an integral projection defined within the skirt and extending therefrom, the skirt and the projection defining a channel therebetween. A heater is placed between the projection and a portion of an external wall of the battery box from which the mounting or lifting member is required to protrude and said portion of the battery box and the projection are urged into contact with the heater. The heater is then withdrawn and the mounting or lifting member and said portion of the battery box are pressed into engagement with one another to secure the member to the battery box with the skirt abutting against the external wall of the battery box. Molten material displaced from the projection during the heating step is received in the channel.

3,684,583
RECHARGEABLE CELL HOLDER
Robert J. Lehnen and Raymond K. Sugalski, Gainesville, Fla., assignors to General Electric Company
Filed Feb. 23, 1971, Ser. No. 118,067
Int. Cl. H01m 1/04
U.S. Cl. 136—173 2 Claims

An improved rechargeable cell is provided comprising an inner cell having a metallic casing with positive and negative electrodes and an electrolyte within the metal casing. An external non-metallic cylindrical case surrounds the metal casing. The non-metallic case has external dimensions, i.e. diameter and length which conform to conventional predetermined cell sizes such as C size and D size cells. The non-metallic case is provided with internal means to center the inner cell therein. An electrode connector coaxially positioned on the internal cell protrudes through a centrally formed aperture on one end wall of the non-metallic case. An enlarged second electrode connector which is attached to the opposite end of the internal cell has an exterior diameter substantially equal to the internal diameter of the non-metallic casing. These elements cooperate to position the internal cell within the non-metallic casing.

3,684,584
THERMOCOUPLE EXTENSION WIRE
Teh Po Wang, Cedar Grove, N.J., assignor to Wilbur B. Driver Company
Original application Dec. 16, 1969, Ser. No. 885,588. Divided and this application Mar. 15, 1971, Ser. No. 124,340
Int. Cl. H01v 1/14
U.S. Cl. 136—241 1 Claim

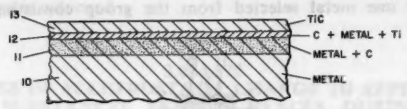


A thermocouple extension wire composition comprising, as expressed in percent by weight: nickel 16%–20%; manganese 1.30%–2.00%; cobalt 0.70%–1.70%; balance copper.

A pair of thermocouple extension wires, one wire having the above composition, the other wire being composed essentially of iron, exhibit a differential electromotive force substantially equal to the electromotive force developed by Type K thermocouple between 32° to 400° F.

3,684,585
METHOD FOR FORMING ADHERENT TITANIUM CARBIDE COATINGS ON METAL OR COMPOSITE SUBSTRATES
Ralph F. Stroup, William H. Clingman, Jr., and Robert C. Post, Dallas, Tex., assignors to Materials Technology Corporation, Dallas, Tex.
Filed July 13, 1970, Ser. No. 54,362
Int. Cl. C23c 11/08
U.S. Cl. 148—6 6 Claims

Disclosed is a method for forming adherent coatings of titanium carbide on metal or composite substrates which includes the steps of carburizing the surface of the substrate and reacting a titanium halide with a volatile hydrocarbon to form an interlayer comprising a mixture of Ti and C in the material of the substrate, and thereafter



depositing a coating of TiC on the interlayer by chemical vapor deposition.

3,684,586
VARIEGATED COATINGS
Gerald Perley Lewis, Streetsville, Ontario, Robert William Smyth, Trail, British Columbia, Philip P. Booker, Beaconsfield, Quebec, and Richard Zeliznak, Oakville, Ontario, Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada
No Drawing. Filed May 25, 1970, Ser. No. 40,421
Int. Cl. C23f 7/02
U.S. Cl. 148—6.3 7 Claims

A process for providing coloured coatings varied in colour and in texture by forming surface film oxides, having light interference colour characteristics, of titanium, manganese, vanadium, columbium, zirconium, thorium or mischmetal alloyed with zinc, tin or lead-tin, said surface film oxides having a varied thickness by exposing a molten stratum of the alloy to a free oxygen containing gas for reaction of oxygen with the alloy and controlling the development of oxide film thickness.

3,684,587
PROCESS FOR THE AFTER-TREATMENT OF PHOSPHATE COATINGS
Emil J. Geering, Grand Island, and Malcolm H. Shatz, Williamsville, N.Y., and Edward Leon, Parkersburg, W. Va., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,259
Int. Cl. C23f 7/00
U.S. Cl. 148—6.15 R 7 Claims

A process for the after-treatment of phosphatized metal articles, which process comprises treating the phosphatized surface of the metal article with a non-aqueous composition containing a sulfur novolac resin having a molecular weight of from about 300 to about 5,000, and thereafter heating the treated metal article at a temperature of at least about 190° C. in the presence of an oxygen-containing atmosphere.

The articles so treated are rendered exceptionally resistant to corrosion and to undercutting when coated with final finish coatings.

3,684,588
METAL TREATING PROCESS
John Patrick Curran, Doylestown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
No Drawing. Filed May 20, 1970, Ser. No. 39,160
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 Z 6 Claims

There is disclosed a method for applying protective chemical coatings to metal surfaces to improve their paint adhesion properties and/or corrosion resistance by sequentially spraying onto said surfaces, through a nozzle system on a single hand wand, a cleaning solution at high pressure such as 300–600 p.s.i., a chemical coating solution at a low pressure such as 80 p.s.i., and a final passivating rinse. Water rinses may also be applied through the same hand wand mounted nozzle system. The method is capable of applying zinc phosphate coatings to ferriferous and zinciferous surfaces, as well as other types of chemical coatings to a wide variety of metal surfaces.

3,684,589

METHOD FOR PRODUCING A MINIMUM-RIDGING TYPE 430 STAINLESS STEEL

Kenneth G. Brickner, O'Hara Township, Allegheny County, and George A. Ratz, Bethel Park Borough, Pa., assignors to United States Steel Corporation

No Drawing. Filed Oct. 2, 1970, Ser. No. 77,679
Int. Cl. C21d *9/46, 9/48*
U.S. Cl. 148—12 2 Claims

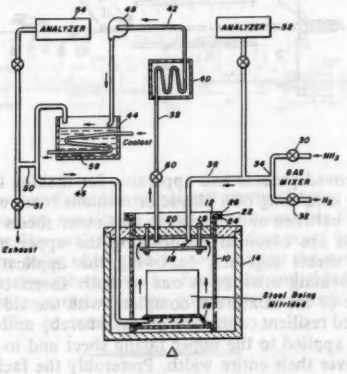
A process for producing a Type 430 stainless steel sheet product with substantially reduced ridging characteristics when drawn. Commencing in slab form, the Type 430 steel is hot rolled at 1850 to 1950° F. to a thickness of 0.1 to 0.25 inch; box annealed at 1750 to 1900° F. for at least one hour and then at 1450 to 1500° F. for at least two hours; cold rolled with a thickness reduction of from 35 to 75%; and continuous annealed at from 1400 to 1500° F.

3,684,590

METHOD FOR MAINTAINING NITRIDING ATMOSPHERE

Harry H. Podgurski, Greensburg, Pa., assignor to United States Steel Corporation

Continuation-in-part of abandoned application Ser. No. 836,324, June 25, 1969. This application Feb. 8, 1971, Ser. No. 113,713
Int. Cl. C23c *11/16*
U.S. Cl. 148—16.6 7 Claims



A method and apparatus for nitriding a steel surface with a binary mixture of ammonia and hydrogen at elevated temperatures and atmospheric pressure wherein the gas mixture is recirculated and scrubbed to remove harmful impurity gases which retard nitriding, and wherein a measurable partial pressure of water in said gas mixture is maintained to suppress the formation of said harmful impurities and to adjust the water partial pressure of said gas to a value within the range 1 to 25 torr.

3,684,591

SINTERED COBALT-RARE EARTH INTERMETALLIC PRODUCT INCLUDING SAMARIUM AND CERIUM AND PERMANENT MAGNETS PRODUCED THEREFROM

Donald L. Martin, Elnora, N.Y., assignor to General Electric Company

Filed Aug. 24, 1970, Ser. No. 66,172
Int. Cl. H01f *1/08*
U.S. Cl. 148—31.57 6 Claims

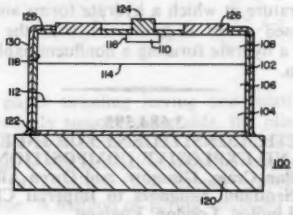
Novel sintered cobalt-rare earth intermetallic products are used to form permanent magnets having unique properties. The sintered product is comprised of intermetallic compounds of cobalt and rare earth metals composed of samarium and cerium. Cobalt is present in an amount of about 60 to 66 percent by weight of the product and the rare earth metals are present in an amount of about 34 to 40 percent by weight of the product with the cerium component ranging in amount from about 10 to 90 percent by weight of the rare earth content. Permanent magnets are formed from the sintered product in bulk form or in particulate form.

3,684,592

PASSIVATED SURFACES AND PROTECTIVE COATINGS FOR SEMICONDUCTOR DEVICES AND PROCESSES FOR PRODUCING THE SAME

Hung Chi Chang, Monroeville, and John W. Ostroski, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,372
Int. Cl. H01l *3/00*
U.S. Cl. 148—33.3 9 Claims



Surface areas and exposed P-N junctions of bodies of semiconductor material are initially etched and then cleaned with (1) ethylenediaminetetraacedic acids or (2) with a solution of iodine or (3) a solution of iodine and iodine pentoxide to obtain an essentially atomically clean surface prior to passivation; the treated surfaces are passivated and primed by a silane composition which is a primer for an overlay of a protective coating material subsequently applied to the passivated surface. The protective coating consists of a material selected from the group consisting of room temperature vulcanizing rubbers, silicone varnishes, solid perfluorohydrocarbons, parylene resins, cured resinous aromatic polyimide, cured resinous aromatic polyamide-imide, and cured resinous benzimidazole-imide copolymer.

3,684,593

HEAT-AGED SINTERED COBALT-RARE EARTH INTERMETALLIC PRODUCT AND PROCESS

Mark G. Benz, Burnt Hills, and Donald L. Martin, Elnora, N.Y., assignors to General Electric Company

Continuation-in-part of application Ser. No. 33,315, Apr. 30, 1970. This application Nov. 2, 1970, Ser. No. 86,288
Int. Cl. H01f *1/06*
U.S. Cl. 148—102 20 Claims

A process for preparing heat-aged novel sintered cobalt-rare earth intermetallic products which can be magnetized to form permanent magnets having stable improved magnetic properties. A sintered cobalt-rare earth metal product is provided which at its sintering temperature is a composition ranging from a single solid Co_5R intermetallic phase to that composed of Co_5R solid intermetallic phase and a second phase of solid CoR which is richer in rare earth metal content than the Co_5R phase and which is present in an amount of up to about 30 percent by weight of the product. The sintered product is heated at a temperature within 400° C. below its sintering temperature to precipitate out of the CO_5R phase a CoR phase richer in rare earth metal content than the Co_5R

phase in an amount sufficient to improve coercive force, either intrinsic and/or normal, of the product by at least 10 percent.

3,684,594

AQUEOUS EXPLOSIVE COMPOSITIONS HAVING REVERSIBLE FLUENT-NONFLUENT PROPERTIES

Richard H. Evans, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 15, 1970, Ser. No. 37,615
Int. Cl. C06b *15/00*
U.S. Cl. 149—38 12 Claims

Aqueous exposive compositions having a density of 1.8 grams/cc. or greater and having reversible fluent-nonfluent properties are provided. These aqueous explosive compositions employ metal perchlorates, capable of forming a hydrate with water, as the oxidizer. Fluent-nonfluent reversibility is achieved by processing the aqueous compositions at temperatures above a temperature at which a hydrate of the perchlorate will dissociate releasing water enabling preparation of a fluent explosive slurry composition. The fluent exposive slurry composition is then cooled to a temperature at which a hydrate forms and the previously released water is combined with the metal perchlorate as a hydrate forming a nonfluent explosive slurry composition.

3,684,595

ENERGETIC CONSTITUENT FOR INCENDIARY AND EXPLOSIVE COMPOSITIONS

William Allan Craig, Glasgow, and Owen Allen Gurton, Fairlie, Scotland, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,414
Claims priority, application Great Britain, Apr. 25, 1969, 21,313/69
Int. Cl. C06b *15/00*
U.S. Cl. 149—41 14 Claims

An energetic constituent for incendiary and explosive compositions comprising liquid non-explosive organic nitrate, for example isopropyl nitrate, thickened with nitrocellulose and ethyl or methl centralite. This constituent may be used, for example, as the sensitising ingredient in aqueous slurry explosive and in extrudable gelatinous blasting and in powdered ammonium nitrate blasting explosives.

3,684,596

PULVERULENT AND WATER BEARING EXPLOSIVE AND PROCESS OF PRODUCING THE SAME

Marcel Vercauteren, Casilla 4244, Lima, Peru

No Drawing. Filed May 1, 1970, Ser. No. 33,901
Claims priority, application Peru, Sept. 15, 1969, A 8,739/69
Int. Cl. C06b *15/00*
U.S. Cl. 149—41 35 Claims

A pulverulent or water bearing explosive mixture and method of making same comprising mixing 0 to 20% by weight of water, 3 to 6% by weight of liquid hydrocarbons, 50 to 97% by weight of mixed crystals produced by co-crystallization of ammonium nitrate and potassium salts, in a preferred ratio by weight of 20/1 to 4/1, the mixed crystals having a crystal form that is isomorphous with the monoclinic crystal form of ammonium nitrate III, the mixed crystals having a lower temperature of crystal form transition than 32.2° C., which is the normal lower temperature of transition of pure ammonium nitrate III, the mixed crystals being crystallized between 100 and 20° C. in the presence of salts of primary amino alkanes, in the preferred amount of 0.2 to 1.5% by weight, having chain lengths ranging from C_8 to C_{18}, and the mixed crystals having a lipophilic surface characteristic, stable at temperatures below 32.2° C., especially between −20 and +20° C.

3,684,597

METHOD OF PRODUCING DENSE OXIDIZER SALT-FUEL COMPOSITION

Jack Robins, Allentown, and Harold B. Harris, Tamaqua, Pa., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed July 25, 1969, Ser. No. 845,068
Int. Cl. C06b *1/04*
U.S. Cl. 149—46 12 Claims

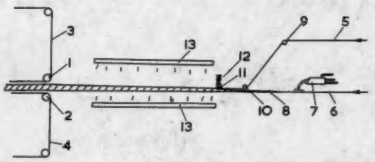
Dense explosive compositions containing an inorganic oxidizer salt, a liquid hydrocarbon fuel, and an oil-retaining surfactant, and methods of preparing them. The compositions are sufficiently dense so that a packing density significantly greater than one can be obtained.

3,684,598

MANUFACTURE OF LAMINATED ARTICLES

David Stone Gilbert, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 22, 1968, Ser. No. 749,561
Claims priority, application Great Britain, July 21, 1967, 33,702/67
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 19 Claims



Improved process and apparatus for making laminated articles consisting of a plastic or resinous foam core sandwiched between and bonded to two outer sheets of facing material are obtained by bringing the upper and lower facing sheets together, following the application of a foam-forming mixture to one or both sheets but before the rise of the mixture is complete, with the aid of spring mounted resilient contacting means whereby uniform pressure is applied to the upper facing sheet and to the foam layer over their entire width. Preferably the facing sheets are so brought together when only a small degree of foam formation has occurred.

3,684,599

Patent Not Issued For This Number

3,684,600

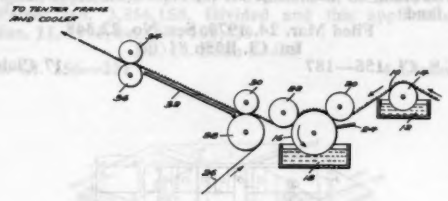
HOT MELT CARPET BACKSIZING PROCESS

George Elmer Smedberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 820,229, Apr. 29, 1969. This application Apr. 10, 1970, Ser. No. 27,414
Int. Cl. B32b *7/08*
U.S. Cl. 156—93 16 Claims

In a process for preparing a carpet comprising forming a tufted structure of a primary backing material stitched with closely spaced erect loops of fiber bundles and applying to the backside of the tufted structure a hot melt adhesive backsizing composition; the improvement comprising, applying to the backside of the tufted structure, at a time prior to the application of the hot melt adhesive

backsizing composition, a low viscosity (2–2000 cps.) precoat adhesive which serves to penetrate the fiber bundles and bond the individual fiber filaments to the primary backing material.



3,684,601

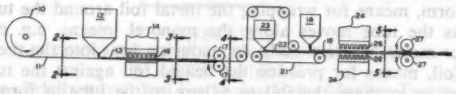
METHOD OF PRODUCING A SOFT OUTER SURFACE OF FINE DENIER FIBER ON A NONWOVEN FABRIC

Richard E. Hayward, Jr., Charlotte, N.C., assignor to Phillips Petroleum Company

Continuation of application Ser. No. 443,317, Mar. 29, 1965. This application Dec. 29, 1969, Ser. No. 888,168

Int. Cl. B32b *5/06, 5/26*

U.S. Cl. 156—148 **6 Claims**



A nonwoven fabric having a soft textured outer surface is produced by needling a layer of heat-sealable fibers to a polymer film said film having a melting point less than the melting point of said fibers, and heating the composite to impart strength thereto by fusing the individual fibers at both outer surfaces of the composite and melting said polymer film to interlock the fibers.

3,684,602

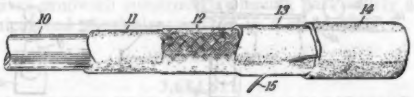
MANUFACTURE OF FLEXIBLE HOSE PIPES

Eric Ball, Newcastle-upon-Tyne, England, assignor to George Angus & Company Limited, Newcastle-upon-Tyne, England

Filed Aug. 8, 1969, Ser. No. 848,535

Int. Cl. B29d *31/00*

U.S. Cl. 156—149 **4 Claims**



A method of manufacturing a flexible hose pipe comprising an inner tubular layer of rubber, a surrounding lapped or braided reinforcement of metal wire or monofilament plastics material and an outer cover of synthetic rubber, in which a thin sheath of expendable rubber is applied over the outer cover to protect it during vulcanization and is stripped from the hose assembly after it has been vulcanized.

3,684,603

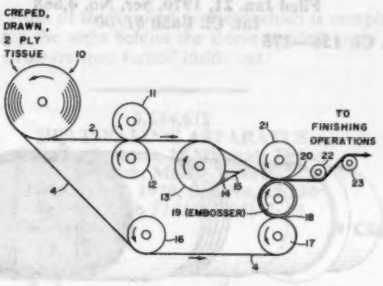
METHOD OF MAKING A TWO-SIDED TOWEL

Charles O. Iltis, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original application Nov. 9, 1967, Ser. No. 681,794. Divided and this application Apr. 6, 1970, Ser. No. 25,933

Int. Cl. B32b *31/00*

U.S. Cl. 156—152 **4 Claims**



Two-ply paper toweling having one relatively rough and one relatively smooth outer side, the plies being retained together by a combination of randomly distributed adhesive and a mechanical embossing action, and the plies being of relatively low stretch creped cellulosic wadding tissue. A method of plying the paper tissues into absorbent, soft, comfortable, relatively strong and abrasion resistant toweling in which one ply is pre-embossed and carried by the embossing element without removal into adhesive contact with a relatively smooth unembossed ply for embossing as a unit. The smooth ply carries the adhesive, preferably in discrete zones, and the adhesive bonding between plies is then very limited because it occurs primarily where peaks of the pre-embossed sheet contact the discrete adhesive zones of the unembossed sheet.

3,684,604

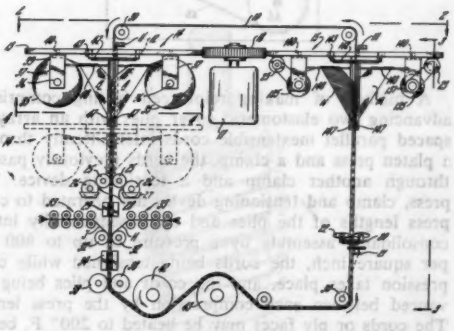
METHOD AND APPARATUS FOR MAKING BIAS REINFORCED MATERIALS

Karl E. Sager, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 27, 1970, Ser. No. 31,973

Int. Cl. B65h *81/00*

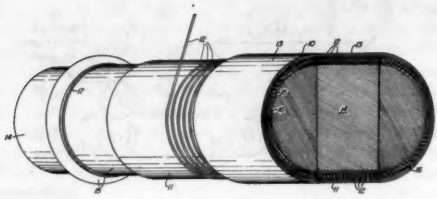
U.S. Cl. 156—171 **25 Claims**



Bias reinforced materials such as nonwoven fabrics are made by helically wrapping a first ply about a continuously moving carrier belt, placing a second ply longitudinally

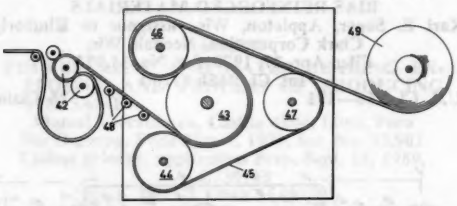
along the belt over each side of the helical wrapping, bonding the plies, cutting the second ply along lines adjacent the edges of the first ply, and unwrapping the first ply with the second ply bonded thereto.

3,684,605
METHOD OF CONSTRUCTING A THIN-WALLED CANNULA
Hans H. J. Zwart, Salt Lake City, Utah, assignor to The University of Utah
Filed Jan. 21, 1970, Ser. No. 4,668
Int. Cl. B65h *81/00*
U.S. Cl. 156—175 3 Claims



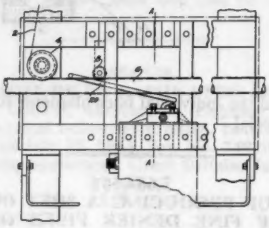
The invention disclosed herein pertains to the materials of and methods for constructing thin-walled cannulas for use in the body or in close proximity thereto for transporting fluids.

3,684,606
METHOD OF MAKING REINFORCED BELTING
John W. Grainger, Newport, New South Wales, Australia, assignor to Olympic General Products Proprietary Limited, West Footscray, Victoria, Australia
Filed June 24, 1969, Ser. No. 835,980
Claims priority, application Australia, June 24, 1968, 39,606/68
Int. Cl. B32b *5/00*; B32f *29/02*
U.S. Cl. 156—137 13 Claims



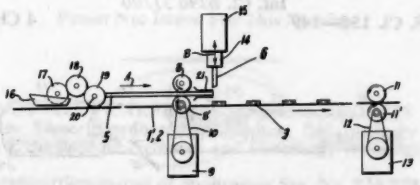
A method of making reinforced belting comprising advancing two elastomeric cover plies with an array of spaced parallel inextensible cords intermittently through a platen press and a clamp, the cords previously passing through another clamp and a tensioning device. The press, clamp and tensioning device are operated to compress lengths of the plies and cords sequentially into a consolidated assembly by a pressure of up to 800 lbs. per square inch, the cords being tensioned while compression takes place, and the cords and plies being advanced between each compression by the press length. The cords or ply faces may be heated to 200° F. before compressing to ensure penetration of the cord interstices. Vulcanisation is performed subsequently in a rotary vulcanising apparatus modified to ensure entry tangential to the rollers thereof.

3,684,607
MANUFACTURE OF COLLAPSIBLE PACKAGING TUBES
Cecil Edward Morris, 224 Settle St., Great Lever, Bolton, Lancashire, England, and Anthony St. John Rowbotham, 39 Highridge Road, Hemel Hempstead, England
Filed Mar. 24, 1970, Ser. No. 22,348
Int. Cl. B65h *81/04*
U.S. Cl. 156—187 17 Claims



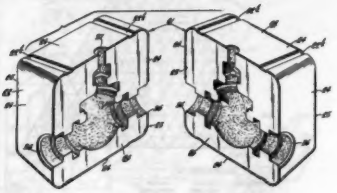
Apparatus for forming collapsible laminated tubes by wrapping metal foil around a tube of plastics material comprises a mandrel, means for continuously moving, e.g. extruding, a tube of plastics material along the mandrel, at least one supply of metal foil in continuous strip form, means for wrapping the metal foil around the tube as the tube moves along the mandrel, means, e.g. one or more induction coils, for inducing heat into the metal foil, means for pressing the heated foil against the tube so as to cause the foil to adhere to the tube to form a laminated tube, and cutting means for cutting the laminated tube into required lengths.

3,684,608
WEIGHTING BAND FOR CURTAINS, DRAPES OR THE LIKE AS WELL AS FOR ITS MANUFACTURE
Rudolf Schmitz, Emsdetten, and Franz Baier, Saerbeck, Germany, assignors to Firma Gardisette G.m.b.H., Zug, Switzerland
Filed Dec. 9, 1968, Ser. No. 782,402
Claims priority, application Germany, Dec. 12, 1967, G 51,869
Int. Cl. B29d *23/10*
U.S. Cl. 156—203 9 Claims



A method and apparatus for producing a weighting band for curtains, drapes and the like in which the lead bodies are arranged at a predetermined spacing within an envelope surrounding the same and in which the lead bodies are retained in the predetermined spacing without the need of a core as well as weighting bands produced by means of such method and apparatus.

3,684,609
INSULATING PIPE ACCOUTERMENTS AND THE LIKE
Marvin Schneider, 65 Brennan Drive, Bryn Mawr, Pa. 19010
Original application Apr. 26, 1967, Ser. No. 633,802, now Patent No. 3,556,158. Divided and this application Jan. 11, 1971, Ser. No. 105,429
Int. Cl. B32b *31/00*
U.S. Cl. 156—221 4 Claims



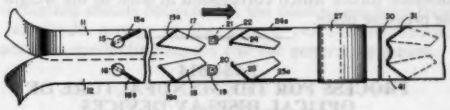
This patent deals with insulating with insulators formed of a pair of blanks. Each blank comprises a rigid outer shell with one open face, and interiorly of the shell is a block or insert of a novel polyurethane foam. The blanks are used for insulating pipe accouterments such as valves, flanges, traps, etc. in which the accouterment being insulated acts as a die for forming the foam to substantially conform of the contour of the accounterment.

3,684,610
METHOD OF PRODUCING METAL-CLAD PLASTIC PANELS
Hans Frielingsdorf, Bad Durkheim, Heinz Mueller-Tamm, Ludwigshafen, and Dieter Mahling, Neuleiningen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Aug. 26, 1969, Ser. No. 853,126
Claims priority, application Germany, Aug. 27, 1968, P 17 79 554.9
Int. Cl. B29d *7/02;* B32b *15/08*
U.S. Cl. 156—244 6 Claims

A process for the production of sandwich constructions consisting of (a) an inner ply of polyethylene; (b) adhesion-promoting interlayers applied to both sides of the inner ply and (c) outer plies of metal applied to the two interlayers. It is a characteristic feature of the invention that sheeting is prepared continuously from a special polyethylene by means of a screw extruder at a specific temperature of the material, this sheeting is covered on both sides with a film of a special terpolymer by means of a pair of rollers, the resultant laminate is then covered continuously by means of a pair of rollers at a specific temperature of the material with metal sheeting having a specific temperature and the whole is combined to form a sandwich panel under a specific roller pressure. The process gives sandwich constructions having particularly good chemical and physical properties in a simple way.

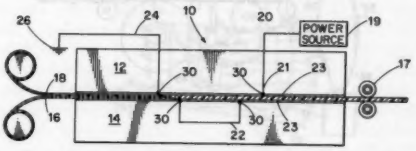
3,684,611
SMOCK-FORMING MACHINE AND METHOD
Grantland A. Craig, Green Bay, Wis., assignor to Paper Converting Machine Co., Inc., Green Bay, Wis.
Filed Apr. 15, 1970, Ser. No. 28,571
Int. Cl. B32b *31/04*
U.S. Cl. 156—250 13 Claims

A pair of web panels is advanced side-by-side on a supporting surface and a rear edge of a preformed sleeve secured to each of the webs, the webs being connected above the sleeves either directly or by a third web and the sleeve edges bonded also to the web structure overhead. To the pair of web panels being advanced, adhesive may also be applied on top of the webs for securing preformed pockets, lapels, fasteners, etc. so that these will



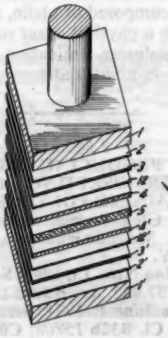
be at the front of the finished garment which is completed by severing the webs behind the sleeve-bonded areas and the web structure then turned inside out.

3,684,612
HEATSEALING APPARATUS
John A. Pantazis, 18 Westgate Drive, Woburn, Mass. 01801
Filed Apr. 2, 1970, Ser. No. 25,280
Int. Cl. B32b *31/18;* H05b *7/18*
U.S. Cl. 156—251 9 Claims



Novel heat generating apparatus, useful in heatsealing plastics and similar applications requiring carefully controlled application of heat to sheet materials, whereby heat from a succession of sparks is dissipated along the surface of superposed plastic sheets. The sheets are mounted for movement between electrodes which are offset from one another, advantageously by a distance of about 0.125 inch or more along the sheet surface.

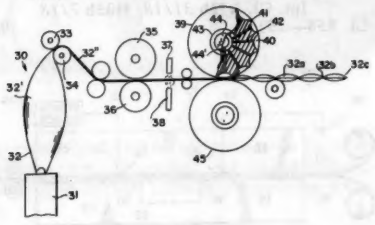
3,684,613
PROCEDURE FOR TEMPORARILY ATTACHING A PRESSURE PLATE TO A HEATER PLATE
Hans Frohning, Essen, Germany, assignor to Th. Goldschmidt AG, Essen Germany
Filed Feb. 5, 1970, Ser. No. 8,923
Claims priority, application Germany, July 15, 1969, P 19 35 901.4; Oct. 21, 1969, P 19 52 923.8
Int. Cl. B30b *9/00*
U.S. Cl. 156—289 20 Claims



A caul or pressure plate is temporarily attached to the pressure transmitting surface of a heater plate or

platen of a hot press by introducing a substance between the heater plate and the pressure plate which, under the operational conditions of the press, is liquid or flowable and forms an adhesive layer which exerts adhesion and cohesion forces which correspond at least to the weight of the pressure plate.

3,684,614
PROCESS FOR THE MANUFACTURE OF OPTICAL DISPLAY DEVICES
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 393,292, Aug. 31, 1964, now Patent No. 3,594,254, which is a continuation-in-part of application Ser. No. 703,523, Dec. 18, 1957, now Patent No. 3,146,492. This application Aug. 11, 1969, Ser. No. 849,117
Int. Cl. B32b *31/00*
U.S. Cl. 156—292 **8 Claims**



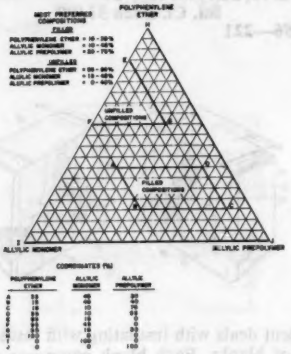
A display material and an apparatus for automatically manufacturing same are provided. The display is composed of a plurality of gratings or grids which are separated from each other by a thin transparent sheet material, such as a plastic polymer, so as to provide an optical effect which includes light interference effects such as Moire fringe bands which are attention-getting.

3,684,615
METHOD OF FABRICATING A LAMINATED ID CARD BEARING CODED DATA TO BE READ BY A PHOTOELECTRIC INPUT DEVICE OF A DATA PROCESSOR
Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,894
Int. Cl. C09j *5/06*
U.S. Cl. 156—306 **1 Claim**

This disclosure is drawn to a method of fabricating a laminated ID card bearing coded indicia which may be read by a photoelectric pickup device, the process involving the marking of the coded indicia upon a data bearing sheet, preferably composed of olefin, and treating the data bearing sheet with a physical agent such as heat either before or preferably during lamination to render it substantially transparent in unmarked portions of the data bearing sheet.

3,684,616
METHOD OF PRODUCING LAMINATES FROM MIXED THERMOSETTING RESIN COMPOSITIONS CONTAINING POLYPHENYLENE ETHERS
Carl L. Wright, Glen Burnie, and Harry H. Beacham, Severna Park, Md., assignors to FMC Corporation, New York, N.Y.
Original application Nov. 13, 1967, Ser. No. 682,326, now Patent No. 3,557,045, dated Jan. 19, 1971. Divided and this application June 1, 1971, Ser. No. 54,063
Int. Cl. B32b *15/08;* **C09j** *5/06*
U.S. Cl. 156—322 **7 Claims**

This specification discloses the thermosetting resin compositions of improved qualities made by combining a high-temperature thermoplastic resin, i.e., a polyphenylene ether polymer, with organic materials containing polymerizable carbon to carbon unsaturation, particularly diallylic phthalate monomers and prepolymers. These polyphenylene ether polymers combine with polymerizable



materials containing carbon to carbon unsaturation in the presence of a free radical catalyst. These compositions are formed by moderate heat and pressure into articles with excellent electrical and mechanical properties which are retained at elevated temperatures, and under conditions of high humidity.

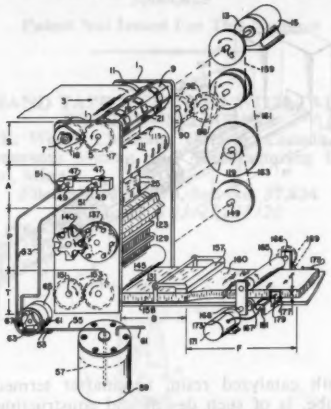
3,684,617
CURABLE EPOXY RESIN/ACRYLIC RESIN MIXTURES
Leo J. Windecker, 1605 Midkiff, Midland, Tex. 79701
No Drawing. Filed Mar. 11, 1970, Ser. No. 18,767
Int. Cl. C09j *3/16*
U.S. Cl. 156—330 **5 Claims**

A curable mixture of epoxy or vinyl ester resin and acrylic resin is used as an adhesive between an epoxy or vinyl ester resin and an acrylic resin or as a metal coating.

3,684,618
FABRICATION OF HONEYCOMB TYPE CELLULAR MATERIALS
Robert C. Geschwender, 1800 Center Park Road, Lincoln, Nebr. 68108
Continuation-in-part of application Ser. No. 652,555, July 11, 1967. This application May 27, 1970, Ser. No. 40,750
Int. Cl. B32b *31/08, 31/18, 31/20*
U.S. Cl. 156—361 **13 Claims**

A strip of suitable material, such as treated kraft paper, metal foil or the like is drawn between rolls of a slitter, so designed that by means of a very simple adjustment the finished product may have a selected one of a number of sizes and angles of honeycomb type cells. After slitting, the strip passes through an adhesive applicator having outlets to imprint staggered areas of adhesive on opposite sides of the strip between rows of slits. The applicator is constructed to prevent access of air to the adhesive during its travel from a supply to the imprinting region thus preventing premature setting of the adhesive and clogging of moving parts. Next the slitted strip with applied adhesive passes between substantially spaced folding wheels which will accept strips of various thicknesses for pleating and designed to minimize smearing of the adhesive. As the strip passes through the folding wheels the adhesive spacedly joins adjacent pleats. After the pleated material leaves the pleating wheels it is sent to

braking apparatus which forms a uniform and leveled compaction wherein the adhesive sets. Then the material is drawn from the compaction by pulling apparatus to stretch it, thereby forming the honeycomb type cells. As the cellular web is pulled its width becomes less. Width-

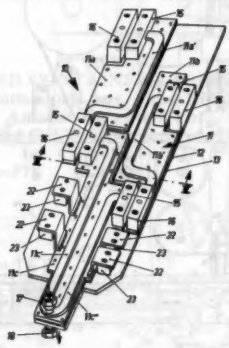


sensing means provides a signal indicating any deviation from the desired width. This signal is applied to means for controlling the speed of operation of the pulling apparatus to compensate for any incipient deviation from the desired width.

3,684,619
APPARATUS FOR MAKING SEALS ON CONTAINERS

Otto Engler, Karlsruhe, Theodor Hammer, Kandel, Pfalz, and Meinhard Müller, Karlsruhe, Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed May 7, 1970, Ser. No. 35,421
Claims priority, application Germany, Oct. 3, 1969, P 19 49 927.5
Int. Cl. B29c *27/06;* **B32b** *31/20*
U.S. Cl. 156—380 **23 Claims**

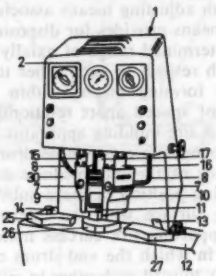


An apparatus for making transverse seals on collapsible, tubular containers having a laminated wall comprising an inner layer of plastic material and a metal layer outside the plastic layer. The apparatus comprises generating means for generating high-frequency energy and a source of cooling medium associated with the generating means for supplying the cooling medium to the same. Distributing means is spaced from the generating means and the source and flexible conducting means connects the generating means with the distributing means for supplying high-frequency energy and cooling medium from the generating means to the distributing means. Electrode means is connected with the distributing means for receiving high-frequency energy and cooling medium from the same and recirculating means recirculates the cooling medium from the electrode means to the source via the distributing means, the conducting means and the generating means.

3,684,620
ELECTRIC HEAT SEALING MACHINE

Richard Hoffmann, Schillerstrasse 12, Hechingen, Hohenzollern, Germany

Filed Apr. 25, 1968, Ser. No. 724,068
Claims priority, application Germany, May 22, 1967, B 92,649
Int. Cl. B29c *27/10;* **B32b** *31/20*
U.S. Cl. 156—380 **1 Claim**

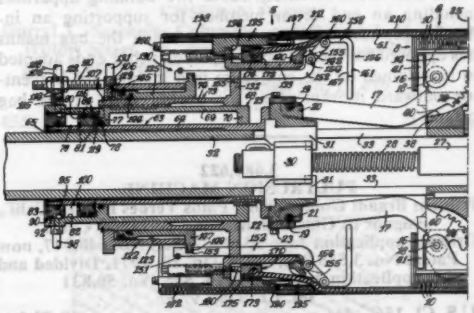


An apparatus for connection of plane elements of natural or synthetic material which comprises a housing and a heat source for activating of the glue layer on a workpiece and secured to the housing. A holding down member and an electrode are provided, both being movable perpendicularly towards one of said workpiece and workpiece support, respectively, and the electrode cooperates with the hold-down member. The abutment edge portion of the holding-down member as well as the welding part of the electrode are substantially complementary to the overlapping edge parts of two workpieces.

3,684,621
TIRE BUILDING DRUM

Larry C. Frazier, Sun City, Ariz., and Emerson C. Bryant, South Bend, Ind., assignors to National-Standard Company, Niles, Mich.

Filed June 18, 1970, Ser. No. 47,522
Int. Cl. B29h *17/16, 17/22, 17/26*
U.S. Cl. 156—401 **19 Claims**



A tire building apparatus having an intermediate expandable drum embodying axially movable intermediate

drum expanding and contracting means to dispose the intermediate expandable drum in positions defining substantially cylindrical supporting surfaces of different radii, end drum and tire bead shoulder supporting means movable axially with movable drum expanding and contracting means, end drum carrier means movable axially with and relative to the end drum and bead shoulder supporting means, end drums supported by said end drum carrier means at opposite ends of the intermediate drum, and tire bead shoulder carrier means movable axially of and relative to the end drum carrier means in which the tire bead shoulder carrier means is provided with tire bead shoulder forming means mounted on the end drum carrier means adapted to be positioned to form tire bead shoulders opposite the ends of the intermediate expandable drum in predetermined axial positions of the end drum carrier means and the tire bead shoulder carrier means. The incorporation in an assembly as last noted in which end drum adjusting means associated with the end drum carrier means provides for disposing the end drums within a predetermined range of axially spaced apart relationships with respect to each other to dispose the tire bead shoulder forming means within a predetermined infinite range of spaced apart relationships with respect to each other. A tire building apparatus having the aforementioned intermediate expandable drum and end drums at opposite ends of the intermediate drum which in an initial or starting position define a substantially cylindrical supporting surface with the intermediate drum assembly for supporting tire carcass material in the form of a cylinder, in which the end drum carrier means are movable axially toward each other to move the end drums and the end portions of the tire carcass material on the end drums axially toward each other to compensate or allow for the formation of tire bead shoulders, against which tire beads are positioned, by the radial outward movement of the tire carcass material on the intermediate expandable drum by the tire bead shoulder forming means without substantially distorting the tire carcass material around the intermediate drum assembly and the end drums, and in which opposite end portions of the tire carcass material are layed over the tire beads to encase the tire beads.

The aforedescribed tire building apparatus for building a radial tire in which the tire beads are encased in tire carcass material having substantially inextensible reinforcing cords extending axially from bead to bead, and embodying control means between the end drum and bead shoulder supporting means and the drum carrier means so that the encased and anchored tire beads maintain the reinforcing cords under tension from bead to bead providing a constant bead to bead dimension in displacement of tire carcass material into substantially torous configuration approximating that of a completed tire.

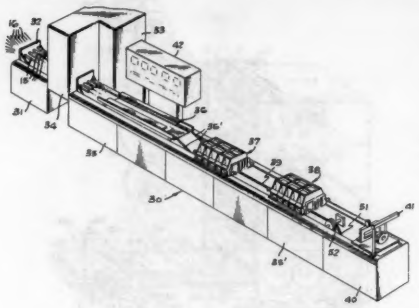
An end drum assembly for a tire building apparatus including an end drum member for supporting an inflatable ply turn-up bag means in which the bag means has opposed but spaced apart tapered anchor ends adapted to be retained on the end drum in a manner for preventing outward movement of the anchor ends of the bag means.

3,684,622
PULTRUSION MACHINE

William Brandt Goldsworthy, Palos Verdes Estates, Calif., assignor to Glastrusions, Inc., Torrance, Calif.

Original application June 23, 1967, Ser. No. 648,347, now Patent No. 3,556,888, dated Jan. 19, 1971. Divided and this application June 29, 1970, Ser. No. 50,831
Int. Cl. B29h *9/00*
U.S. Cl. 156—441 **18 Claims**

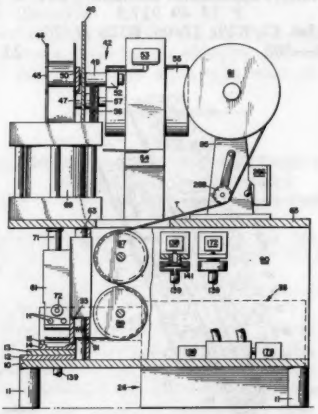
The invention is embodied in a device for continuously forming stock material from a combination of filaments impregnated with synthetic thermosetting plastic resin into which an appropriate hardener is entrained, followed by what amounts to extremely rapid curing while the stock passes through a forming die through which it is pulled by a hand-over-hand type of pulling device. An impregnating or composing tube wherein the filament is impregnated with catalyzed resin, hereinafter termed a composing tube, is of such design and construction that the action assists in pushing the stock through the process providing a combined action which gives rise to the designation "pultrusion machine."



3,684,623
METHOD AND APPARATUS FOR AUTOMATICALLY SPLICING FILM

Paul J. Koehler, West Gill Road, Gill, Mass. 01376, and Bruce D. Aldo, 6 Redwing Road, Enfield, Conn. 06082

Filed May 8, 1970, Ser. No. 35,760
Int. Cl. B65h *19/08;* **G03d** *15/04*
U.S. Cl. 156—504 **5 Claims**



A method and apparatus for assisting the photofinisher in securing together, in a continuous master roll, a plurality of film strips for purposes of subsequently processing same. The apparatus severs the trailing end of a first film strip or leader previously introduced thereinto, severs the leading end of a second film strip following its introduction thereinto, photographically codes that second film strip for ready identification, and secures the adjacent ends of the two (first and second) film strips together with an interconnecting tab to form the two films as integral parts of the continuous master roll.

3,684,624

Patent Not Issued For This Number

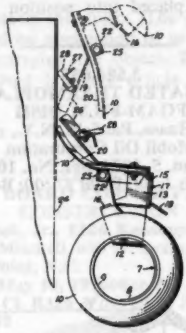
3,684,625

Patent Not Issued For This Number

3,684,626
HAND TAPE DISPENSER WITH TAPE POSITIONING MEANS

Donald E. Wood, Chatham, Ontario, Canada, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 15, 1970, Ser. No. 37,834
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—576 **5 Claims**

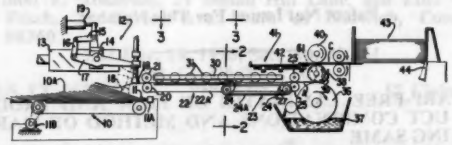


A tape dispensing device comprising an arcuate portion defining a tape supply roll support, tape guides for directing the free end of the tape from the roll, a tape support member to support the free end of the length of tape, and a tape severing blade positioned along the path of the tape for cutting a dispensed and applied length of tape. The dispenser may also have a wiper for pressing and smoothing the tape into contact with the surface to which it is applied.

3,684,627
PAPERBOARD CONTAINER LABELING MACHINE

William J. Hottendorf, Los Altos Hills, Calif., assignor to Ametek, Inc., New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,059
Int. Cl. B65c *9/14, 1/02*
U.S. Cl. 156—578 **8 Claims**

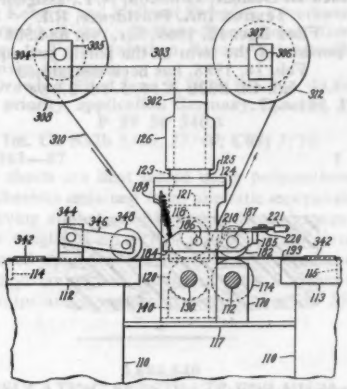


A label applying machine for applying labels to a moving paperboard container sheet or blank, the machine having a conveyor with one conveyor moving faster than a retarding or timing means so that the labels reach a glue applying roll at the proper time and are then fed to a vacuum roll with adjustable vacuum release means. The adjustable vacuum release is arranged so that a label is released and placed on a moving paperboard container sheet at the proper place. The conveyor means also moves a label sidewise as it moves it forward toward the glue applying roll so as to assist in proper location.

3,684,628
APPARATUS FOR COATING WORK PIECES WITH THERMOPLASTIC MATERIAL

Terence J. L. Clarke, Leicester, England, and Ivor Evans, deceased, late of Leicester, England, by Josie V. Evans, administratrix, Cossington, England, assignors to United Shoe Machinery Corporation, Boston, Mass.

Original application Sept. 6, 1967, Ser. No. 667,323, now Patent No. 3,580,774. Divided and this application Jan. 12, 1970, Ser. No. 7,438
Int. Cl. B30b *15/34;* **B32b** *31/20*
U.S. Cl. 156—583 **3 Claims**



Apparatus for coating sheet work pieces with thermoplastic adhesive is provided comprising a table, a portion of which is arranged to be heated for warming the thermoplastic adhesive material for light adherence to work pieces and upper and lower presser rolls operable progressively to heat and press the assembly, the lower roll being provided with heating means for softening the adhesive material while the upper roll is deformable for pressing the layer of adhesive material firmly against the work pieces and the layer of stripper material adjacent the peripheries of the work pieces. Preferably, the apparatus includes means for tensioning backing material for the adhesive film and means for taking up the stripper material after passage through the presser rolls.

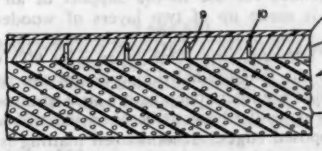
3,684,629

Patent Not Issued For This Number

3,684,630
CUSHION FLOOR

Darryl L. Sensenig, Columbia, and Robert I. Shaub, Jr., Willow Street, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

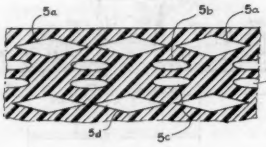
Filed Mar. 9, 1970, Ser. No. 17,479
Int. Cl. B32b *3/18*
U.S. Cl. 161—36 **2 Claims**



The flooring structure is composed of three layers. The upper layer is a wear layer surface which may have a

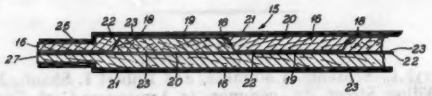
decorative design or configuration. The lower layer is a cushion or foam backing which is generally resilient. Between the upper and lower layers there is deposited a layer which is used to distribute the load applied on the upper layer to a wide surface area of the lower layer. The load distributing structure may be a plurality of interconnected plates, a thin unitary sheet structure or a sheet structure divided into a plurality of interconnected plates.

3,684,631
GLASS ARMOR FABRICATION
Jack D. Dunbar, Lewiston, N.Y., assignor to Textron Inc., Providence, R.I.
Filed Dec. 12, 1969, Ser. No. 884,508
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed
Int. Cl. B32b *3/14, 5/16, 27/04*
U.S. Cl. 161—37 **6 Claims**



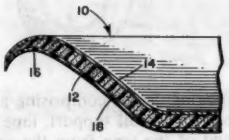
An armor fabrication adapted to defeat shaped charge projectiles comprising laminae consisting of a series of discus shaped platelets of glass, ceramics, or material having similar properties retained together in a layered, overlapping geometric pattern, such that no body free path exists through the armor. The platelets are preferably of bi-conical configuration.

3,684,632
LAMINATED PALLET AND METHOD OF MAKING SAME
Rafael De Jesus Pedraza, 4767 E. 10th Lane, Hialeah, Fla. 33013
Continuation-in-part of abandoned application Ser. No. 10,144, Feb. 10, 1970. This application Feb. 4, 1971, Ser. No. 112,709
Int. Cl. B32b *3/02, 3/18, 31/06, 31/10, 31/12*
U.S. Cl. 161—41 **18 Claims**



A laminated flat surface is shown designed primarily for use as a pallet, more particularly one supplied with a rim having tie-downs for the formation of a unit load support intended for use in the support of air freight. The pallet is made up of two layers of wooden strips, each strip being formed at its side edge and abutted against an adjacent strip. One layer is at 90° with the other as to the longitudinal dimension of the strip. The strips of wood are interwoven with a strip of non-oriented fiberglass which fills the gaps between the wooden strips at their opposed edges. A non-woven matting is applied at the upper and lower portion of the mat, and outside the non-woven portion is a woven layer of fabric. In the method of lay-up a flat mold is employed in which a woven layer of fabric is first laid down. Thereafter it is impregnated with a resin. Subsequently the non-woven mat is placed thereatop, and a further layer of resin applied. The first panel of strips is then placed thereatop, the strips being held together by staple means across the adjacent edges. The second panel of strips is placed thereatop, followed by the non-woven mat and thereafter optionally a woven fabric. At each step the layer placed down, and the layers thereatop are repetitively soaked with a resin. When the last layer is placed, and resin soaked thereatop, the units are sandwiched with a top portion of the mold and held in compression for approximately two to three hours in match-mold pressure relationship to thereby utilize the exothermic reaction of the curing resin to impregnate all of the fiberglass members and the wood in a solid unit. Optionally the edges may be beveled, and after a cure time of two or three hours, the peripheral rails and corner posts are placed into position and the mat is completed.

3,684,633
LAMINATED THERMOPLASTIC FOAM-FILM DISH
Donald A. Haase, Penfield, N.Y., assignor to Mobil Oil Corporation
Filed Jan. 5, 1971, Ser. No. 104,046
Int. Cl. B32b *1/04;* **B29d** *27/00;* **B65d** *25/00*
U.S. Cl. 161—44 **10 Claims**



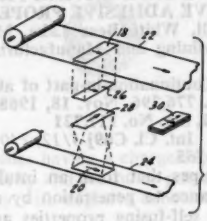
A disposable plastic dish comprised of a thin lamina of oriented thermoplastic film superimposed upon a polystyrene foam lamina, the dish having an outwardly extending rim at its upper periphery, the foam of the rim being compressed to strengthen the edge of the dish and to result in the rim tapering to a thin edge at the periphery of the dish. The thin edge of the rim is substantially shielded from view from above by the superimposed thermoplastic film and the configuration of the rim.

3,684,634
Patent Not Issued For This Number

3,684,635
WARP-FREE LAMINATES OF FILM AND PRODUCT COMBINATIONS AND METHOD OF MAKING SAME
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Continuation-in-part of abandoned application Ser. No. 884,837, Dec. 15, 1969. This application Aug. 17, 1970, Ser. No. 64,405
Int. Cl. B32b *7/00, 27/10*
U.S. Cl. 161—43 **11 Claims**

Covers a method of laminating an object utilizing a film comprising a combination of polyethylene terephthalate thermoplastic resin such as polyethylene to provide substantially warp-free laminates. The process is carried out by providing two pieces of polyethylene terephthalate and thermoplastic resin films which have been cut

from supply film in a longitudinally perpendicular manner with respect to one another. The object to be laminated is inserted between the films which are now placed in a dimensionally aligned arrangement in a manner such that the heat-fusible thermoplastic resin or adhesive side



of each film contacts the object. The laminating process is then completed by appliaction of pressure and heat to the film layers carrying the object. The invention also covers an improved laminate article derived from the above process.

3,684,636

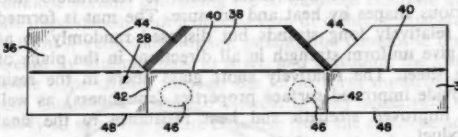
PAPER BOARD CORNER PACKING CONSTRUCTION

Harry E. Rothrock, Jr., 1126 Kensington Drive 27260, and Seldon G. Mitchell, 606 W. Lexington Ave. 27262, both of High Point, N.C.

Filed May 18, 1970, Ser. No. 38,043

Int. Cl. B32b *3/04;* **B65d** *25/14*

U.S. Cl. 161—37 **11 Claims**



A paper board packing construction comprising a plurality of panel sections secured together in a normally flattened condition and adapted to be folded along score and/or slit lines to enclose the corners and/or edges of an article to be shipped.

3,684,637

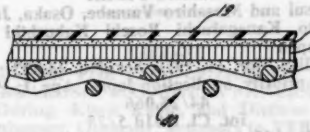
SIMULATED LEATHER LAMINATE AND ITS PREPARATION

Albert E. Anderson, 21 Indian Hill Lane, and Ellis V. Disch, 26 Carrol Ave., both of Norwich, Conn. 06360

Filed Dec. 18, 1970, Ser. No. 99,341

Int. Cl. D04h *11/00*

U.S. Cl. 161—64 **12 Claims**



This invention relates to a method for producing a laminose sheet material and the laminose sheet material which has an outer face or surface skin coat of a nontacky, set pliable-film-forming resin outwardly appearing like simulated leather, bound to a pliable fabric or plastic film base layer through an intermediate layer of flock whose individual fibers appear in substantially parallel array to one another.

3,684,638

Patent Not Issued For This Number

3,684,639

HEAT SEALING TEXTILE SHEETS WITH POLYURETHANE HEAT SEALING ADHESIVES

Wolfgang Keberle and Hellmut Striegler, Leverkusen, and Karl-Arnold Weber, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 9, 1970, Ser. No. 44,863

Claims priority, application Germany, June 14, 1969, P 19 30 340.3

Int. Cl. B32b *5/16, 27/40;* **C09j** *3/16*

U.S. Cl. 161—87 **1 Claim**

Textile sheets are heat sealed using polyurethane heat sealing adhesives obtained from aliphatic isocyanates and glycols having aliphatically bound hydroxyl groups and a molecular weight of up to 400 and 0.1 to 50 percent by weight, based upon the weight of the polyurethane, of a polyhydroxyl compound having at least 2 aliphatic hydroxyl groups and a molecular weight of up to 2500.

3,684,640

INSULATING SUBSTRATE FOR HIGH-FREQUENCY WELDING

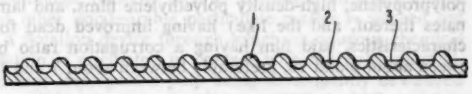
Theo Hillers, Troisdorf, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

Continuation-in-part of application Ser. No. 43,724, June 5, 1970. This application Jan. 4, 1971, Ser. No. 103,446

Claims priority, application Germany, June 6, 1969, P 19 28 662.5; Jan. 2, 1970, P 20 00 139.2

Int. Cl. B32b *3/10, 3/30, 5/18*

U.S. Cl. 161—114 **4 Claims**



A composite article formed by high frequency welding of synthetic resins is formed by the use of an insulating material which comprises the substrate for the high frequency welding of a synthetic resin, such as polyvinyl chloride foam, to the sieve-like perforated material, such as various textile materials, nettle cloth, tricot or perforated synthetic resin films. The insulating substrate is provided with a plurality of relatively small protuberances and/or indentations on the side which faces the material to be welded, resulting in an excellent welding bond.

3,684,641

LAMINATED PRODUCT BONDED WITH COLORED ADHESIVE

James A. Murphy, Camarillo, Calif., assignor to International Paper Company, New York, N.Y.

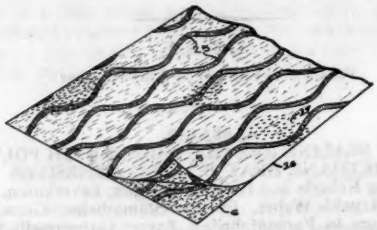
Filed Nov. 10, 1970, Ser. No. 88,523

Int. Cl. B32b *7/14*

U.S. Cl. 161—129 **9 Claims**

A multi-ply creped tissue paper containing printing between the plies of tissue to create a pattern of muted

and aesthetically pleasing coloration visible on the exterior surface of the plies and the method of making the



product which involves the use of water based adhesives as the printing media.

3,684,642
CORRUGATED PACKAGING FILM AND ITS PREPARATION
Fulton Floyd Rogers, Jr., Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 9, 1971, Ser. No. 113,849
Int. Cl. B32b *3/28*
U.S. Cl. 161—135 **10 Claims**

A corrugated, vinylidene chloride polymer-coated, polymeric packaging film (e.g., cellophane, polyester, polypropylene, high-density polyethylene films, and laminates thereof, and the like) having improved dead fold characteristics, said film having a corrugation ratio between about 6 and 20, preferably between about 7 and 15.

3,684,643
PAPER LAYERS LAMINATED BY POLYETHYLENE LAYER
Wendell H. Stepp, Dothan, Ala., assignor to Akwell Industries Incorporated, Dothan, Ala.
Filed Nov. 17, 1969, Ser. No. 877,084
Int. Cl. B32b *3/26, 27/10*
U.S. Cl. 161—160 **5 Claims**

A laminated tissue and polyalkylene paper product and a method of making it. The laminate sheet material comprises two sheets of tissue paper bonded together by an intermediate, continuous polyalkylene layer which is substantially completely impregnated substantially equally into the adjacent tissue surfaces without penetrating through to the exterior surfaces of the laminate.

Two opposed webs of tissue paper and a substantially continuous curtain of molten polyalkylene are fed into the nip of a pair of coacting pressure rollers. The rate of molten polyalkylene flow is regulated in the range of from about 20% to about 30% of the total weight of the laminate, and the pressure of the rollers against the webs passing therebetween is regulated to feed said webs through the nip without slippage relative thereto and to force said webs into substantial contiguity, with the polyalkylene substantially completely impregnated into but not completely through said webs.

3,684,644
SELF-FUSING TAPE HAVING PRESSURE-SENSITIVE ADHESIVE PROPERTIES
Robert B. Snell, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of abandoned application Ser. No. 776,796, Nov. 18, 1968. This application Feb. 22, 1971, Ser. No. 117,721
Int. Cl. C09j *3/12, 7/02*
U.S. Cl. 161—165 **6 Claims**

Self-fusing tapes that form an insulating sheath having high resistance to penetration by moisture and that have excellent self-fusing properties and immediate adhesion to conductor and insulation surfaces; the tape comprises a self-fusing base sheet based on elastomers and resinous tackifiers and a layer of rubber-resin pressure-sensitive adhesive coated on the base sheet.

3,684,645
GLASS FIBER REINFORCED THERMOPLASTIC ARTICLE
Chester S. Temple, Kennedy Township, Allegheny County, and Jack R. Matthews, Hampton Township, Allegheny County, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 25, 1969, Ser. No. 810,261
Int. Cl. B32b *5/12*
U.S. Cl. 161—141 **14 Claims**

A glass fiber strand mat is combined with a thermoplastic resin containing short glass fibers to produce a thermoplastic resinous sheet which is reformable into various shapes by heat and pressure. The mat is formed of relatively long strands but disposed randomly so as to give uniform strength in all directions in the plane of the sheet. The relatively short glass fibers in the resin provide improved surface properties (roughness) as well as improved strength and heat resistance to the final product.

3,684,646
LAMINAR STRUCTURES OF POLYIMIDES
John Anthony Kreuz, Williamsville, Don Albert Roper, Buffalo, N.Y.; said Kreuz assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,098
Int. Cl. B32b *27/28;* **H01b** *3/30;* **C08g** *20/32*
(Filed under Rule 47(a) and 35 U.S.C. 116)
U.S. Cl. 161—165 **6 Claims**

A laminar article is provided of a layer of a polyimide and a layer of a fluorinated polymer, which structure is suitable in the form of narrow tapes for electrical insulation uses.

3,684,647
NOVEL POLYAMIDE MULTISEGMENTED UNITARY FIBER
Masao Matsui and Masahiro Yamabe, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 31, 1970, Ser. No. 24,093
Claims priority, application Japan, Apr. 1, 1969, 44/25,066
Int. Cl. D01d *5/28*
U.S. Cl. 161—175 **15 Claims**

A novel polyamide multisegmented unitary fiber having an excellent antistatic property which comprises at least two different polyamides in the form of adherent fine multisegments which are disposed in an intermingled relationship with each other in an arbitrary cross section of

the unitary fiber, and which extend substantially continuously along the longitudinal axis of the unitary fiber and occupy at least a part of a periphery of the unitary fiber,

one of the polyamides having a chargeable property with positive triboelectricity and the other polyamide having a chargeable property with negative triboelectricity.

3,684,648

MULTICOMPONENT FILAMENTARY MATERIAL FORMED FROM WASTE MATERIAL

Roland Keith Kunkel, % Celanese Fibers Co., P.O. Box 1414, Charlotte, N.C. 28201, and John Galvin Munro, 4500 Deepwood Drive, Louisville, Ky.

No Drawing. Original application Sept. 12, 1969, Ser. No. 857,564, now Patent No. 3,584,089. Divided and this application Feb. 9, 1971, Ser. No. 114,091

Int. Cl. D02g *3/36*

U.S. Cl. 161—175 **2 Claims**

A conjugate fiber comprising distinct zones of cellulose triacetate and a blend of secondary cellulose acetate with cellulose triacetate, said fiber being produced by a method which comprises injecting into dope stream of secondary cellulose acetate a solution of "waste" multicomponent filamentary material of cellulose triacetate and secondary cellulose acetate, contacting the so-modified cellulose acetate dope stream with a dope stream of cellulose triacetate to form a composite stream, passing the composite dope stream by laminar flow to a jet, and extruding the composite dope stream through the jet to form multicomponent filamentary material. Thereafter may selectively saponify so as to regenerate cellulose from the cellulose acetate, resulting in multicomponent filaments of cellulose triacetate and regenerated cellulose.

3,684,649

RESIN-IMPREGNATED TISSUE OVERLAYS

Ray T. Shelton, Kelso, and Ellsworth O. Jensen, Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,427

Int. Cl. B32b *27/04, 27/06, 27/30*

U.S. Cl. 161—251 **8 Claims**

Disclosed herein is a resin-impregnated tissue useful for overlaying various woody substrates. The tissue is impregnated with an aqueous composition comprising an emulsified thermosetting acrylic resin and a solubilized thermoplastic acrylic resin.

3,684,650

METHOD FOR THE PRODUCTION OF MINERAL FIBER BOARDS, CONTAINING MINERAL WOOL

Gunter Doring, Klaus Kable, and Dietmar Schneider, Sondershausen, Germany, assignors to VEB Klombinat Kali, Sondershausen, Postfach, Germany

No Drawing. Filed Nov. 13, 1969, Ser. No. 876,595

Int. Cl. C03b *37/00*

U.S. Cl. 162—3 **2 Claims**

Mineral fiber boards are produced by digesting a mixture of asbestos, a magnesia binding agent such as magnesia, mineral wool, and water wherein the weight ratio of asbestos to mineral wool is from 1:4 to 1:2.5 and the weight ratio of the binder calculated as MgO to the asbestos is no less than 1:4. The digestion is carried out for a period of time such that the bending strength of the mineral fiber board is at a maximum; the mixture is then made into a sheet by draining and suction.

3,684,651

DIGESTION OF FIBRE PULP FROM VEGETABLE RAW MATERIAL INCLUDING PULP LEVEL CONTROLS

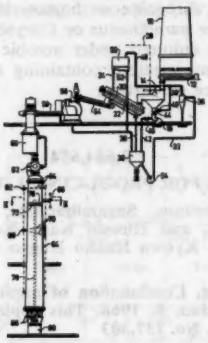
Rolf Bertil Reinhall, Killingevagen 16, Lidingo, Sweden

Filed Jan. 23, 1970, Ser. No. 5,239

Claims priority, application Sweden, Feb. 17, 1969, 2,181/69

Int. Cl. D21c *3/26, 7/12, 9/06*

U.S. Cl. 162—19 **4 Claims**



Method and apparatus for producing pulp from finely comminuted material such as sawdust from which coarse and other nondesirable particulate matter is washed out in a flotation device through which an aqueous chemical solution is circulated in contact with the pulp material, the thus impregnated pulp being subsequently dewatered to a solid content ranging between 30% to 50% and followed by treatment with steam in a digester through which the pulp is passed by gravity and having a controller for maintaining the pulp at a predetermined level above the outlet of the digester and a second controller for maintaining a layer of the pulp at a controlled level above the steam inlet to the digester, the passage of the pulp being arrested adjacent the steam inlet for a predetermined period of time and above the predetermined level of the digested pulp.

3,684,652

METHOD FOR PREPARING CYTIDINE DIPHOSPHATE CHOLINE

Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,743

Claims priority, application Japan, Aug. 4, 1969, 44/60.999

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **13 Claims**

Cytidine diphosphate choline is prepared by culturing an aqueous reaction liquor containing (a) at least one of

the class consisting of choline or phosphoryl choline; (b) at least one of the class consisting of cytidine, cytidine-5'-monophosphate, cytidine-5'-diphosphate or cytidine-5'-triphosphate; (c) enzyme systems of bacteria, yeasts or molds; (d) phosphate ion and (e) at least one of the class consisting of magnesium ion and manganese ion and recovering cytidine diphosphate choline from said culturing liquor.

3,684,653

PROCESS FOR PRODUCING L-THREONINE

Shigeo Abe, Tokyo, and Kenichiro Takayama, Chofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 565,096, July 14, 1966. This application July 15, 1968, Ser. No. 744,696

Claims priority, application Japan, July 16, 1965, 40/42,596

Int. Cl. C12d *13/10*

U.S. Cl. 195—28 R **12 Claims**

A process for producing L-threonine by fermentation. An isoleucine-, threonine- or homoserine-requiring strain of *Arthrobacter paraffineous* or *Corynebacterium hydrocarboclastus* is cultured under aerobic conditions in an aqueous nutrient medium containing a hydrocarbon as the main source of carbon.

3,684,654

PROCESS FOR PRODUCING L-THREONINE

Kiyoshi Nakayama, Sagamihara-shi, Haruo Tanaka, Machida-shi, and Hiroshi Kase, Koganei-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 696,512, Jan. 9, 1968. This application June 17, 1968, Ser. No. 737,303

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **2 Claims**

The process for the production of L-threonine by fermentation which comprises culturing Escherichia microorganisms that require diaminopimelic acid and isoleucine for their growth in an aqueous nutrient medium under aerobic conditions. Yields of about 5–10 g./l. are obtained.

3,684,655

PROCESS FOR PRODUCING N-ACETYLGLUTAMINE

Yuichi Noguchi, Junichi Nakajima, Tetsuo Uno, and Toru Nakanishi, Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 584,989, Oct. 7, 1966. This application July 10, 1968, Ser. No. 743,642

Claims priority, application Japan, Oct. 7, 1965, 40/61,035

Int. Cl. C12d *13/10*

U.S. Cl. 195—29 **13 Claims**

A process for producing N-acetylglutamine by fermentation which comprises culturing a suitable microorganism under aerobic conditions in an aqueous nutrient medium containing at least 0.2 mole per liter, preferably 0.5 to 0.8 mole per liter, of ammonium ion and of chloride ion. Especially good yields are obtained by using sugars as the carbon source and ammonium chloride in the medium. Microorganisms belonging to the genera Brevibacterium and Micrococcus are exemplified.

3,684,656

PROCESS FOR THE MICRO-BIOLOGICAL PREPARATION OF STEROIDS

Willem F. van der Waard, Delft, Netherlands, assignor to Koninklijke Nederlandsche Gist- en Spiritusfabriek N.V., Delft, Netherlands

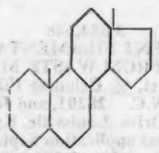
No Drawing. Continuation-in-part of application Ser. No. 722,185, Apr. 18, 1968, which in a continuation-in-part of application Ser. No. 587,409, Oct. 18, 1966. This application Apr. 27, 1970, Ser. No. 32,375

Claims priority, application Netherlands, Oct. 22, 1965, 6513718; Apr. 18, 1967, 6505450

Int. Cl. C07c *167/18*

U.S. Cl. 195—51 G **13 Claims**

Process for the microbiological 17-side chain degradation of steroids having the carbon skeleton shown below:



and bearing at carbon atom 17 an aliphatic group with a minimum of 8 carbon atoms. Enzymes of micro-organisms are used which, with no inhibitor present, would attack the carbon skeleton shown above. This attack is avoided by using inorganic ions as inhibitors.

3,684,657

SELECTIVE MICROBIOLOGICAL DEGRADATION OF STEROIDAL 17-ALKYLS

Stephen Kraychy, Northbrook, William J. Marsheck, Arlington Heights, and Robert D. Muir, Glenview, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed May 11, 1970, Ser. No. 36,421

Int. Cl. C07c *167/18*

U.S. Cl. 195—51 G **12 Claims**

A process is disclosed for preparing androst-4-ene-3,17-dione, androsta - 1,4 - diene - 3,17 - dione, and/or 20α-hydroxymethylpregna-1,4-dien-3-one by fermenting with Mycobacterium sp. N.R.R.L. B–3683 or enzymes thereof a steroid wherein carbon atom number 17 is substituted by alkyl.

3,684,658

ENZYMES AND PROCESS FOR THEIR PREPARATION

Per Staffan Delin, Karl Hans Fritz Kiessling, Karl Hugo Thelin, and Lars Sölve Nathorst-Westfelt, Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Apr. 3, 1970, Ser. No. 25,454

Claims priority, application Great Britain, Apr. 10, 1969, 18,582/69; Feb. 25, 1970, 9,179/70

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **16 Claims**

Novel proteolytic, hydrolytic enzymes by cultivation of a new strain of *Streptomyces globisporus* are produced. The new enzymes are useful as ingredients in detergent compositions, as agents for cell lysis, and for solubilization of biopolymers.

3,684,659

PROCESS FOR THE ENRICHMENT AND PURIFICATION OF L-ASPARAGINASE

Hans Ulrich Bergmeyer, 5a Bahnhofstrasse, 8132 Tutzing, Upper Bavaria, Germany; Wolfgang Gruber, Garatshausen 16, Germany; and Waldemar Thum, Traubinger Strasse 17a; Karlfried Gawehn, Bahnhofstrasse 5a; and Hans Möllering, 5 Waldschmidtstrasse, all of 8132 Tutzing, Upper Bavaria, Germany

No Drawing. Filed Feb. 9, 1970, Ser. No. 10,031
Claims priority, application Germany, Feb. 21, 1969, P 19 08 833.6
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 A 13 Claims

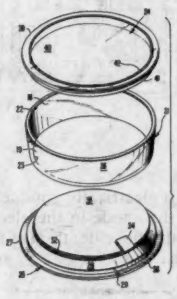
L-asparaginase obtained from *Escherichia coli* is enriched and purified by digesting a cell suspension of *Escherichia coli*, subsequently subjecting the digested suspension to manganese precipitation, treating the supernatant or filtrate from the manganese precipitation with a gel, and separating the gel and eluting the gel at a pH between 8.5 and 10.

3,684,660

MICROBIOLOGICAL SURFACE SAMPLER

Karl Kereluk, Fairview, and Robert S. Lloyd, Erie, Pa., assignors to American Sterilizer Company

Filed May 28, 1969, Ser. No. 828,593
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 11 Claims



An improved construction is provided for a microbiological surface sampler which includes a sampling surface, culture dish and receptacle therefor. The improved construction enables an operator to sample a surface area for microbes and to transfer the sample of microbes thus obtained directly to the receptacle where culture medium is added and the microbe sample is incubated, thereby eliminating the necessity for sterile storage and/or transportation of the microbe sample with subsequent culturing. The invention further provides a novel method of sampling surface areas for microbes in which the microbes on a surface area to be sampled are collected on a nontoxic adhesive coated surface, a layer of a culture medium is deposited over the adhesive coating containing the microbe sample, and thereafter the microbes are incubated in the vicinity of the interface between the adhesive coating and the layer of culture medium.

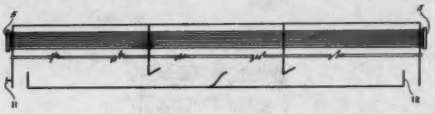
3,684,661

DESALINATION OF SEA OR BRACKISH WATER BY MULTI-STAGE FLASH EVAPORATION

Diego Barba, Via S. Domenico 18; Candido D'Agostino, Largo Generale Gonzaga 4; and Giuseppe Liuzzo, Via Duilio 4, all of Rome, Italy

Filed Apr. 15, 1970, Ser. No. 28,795
Int. Cl. B01d *1/28, 3/02, 3/00, 3/10*
U.S. Cl. 202—173 1 Claim

A flash desalination evaporator having a number of expansion chambers in series and discharge openings for flow of water between the chambers, in which each chamber has a transverse dam, shaped in vertical section like



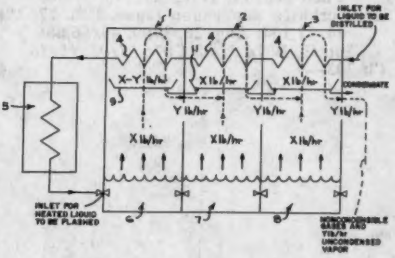
half of a sine curve, sloping with its upper edge forward in the direction of flow, and standing from 5 cm. to 10 cm. higher than the upper side of the flow opening.

3,684,662

MULTIPLE-STAGE FLASH EVAPORATOR

Robert Simpson Silver, Glasgow, Scotland, assignor to Weir Westgarth Limited, East Kilbride, Scotland

Filed Nov. 14, 1969, Ser. No. 876,729
Claims priority, application Great Britain, Nov. 16, 1968, 54,493/68
Int. Cl. B01d *1/28, 3/02, 3/00, 3/06, 3/10;* C02b *1/04*
U.S. Cl. 202—173 2 Claims



A multiple-stage flash evaporator in which the liquid to be distilled first passes through a heater located in the vapour space of a flash chamber in each of a plurality of stages of the evaporator and after being further heated subsequent to the last vapor space is introduced into the first flash chamber to flow through the flash chambers counter to or transversely of the flow of liquid being heated and partly flashes into vapour in said chambers, a substantial proportion of the vapour formed in the flash chamber of one stage being passed uncondensed to another stage.

3,684,663

Patent Not Issued For This Number

3,684,664

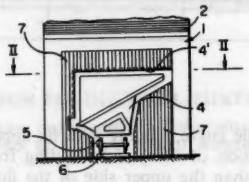
QUENCH CHAMBER CONSTRUCTION FOR THE QUENCHING OF COKE

Josef Stratmann and Manfred Strobel, Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed Mar. 26, 1970, Ser. No. 22,777
Claims priority, application Germany, Apr. 5, 1969, P 19 17 660.4
Int. Cl. C10b *39/00*
U.S. Cl. 202—227 3 Claims

A quench chamber construction for the quenching of coke includes a passageway with at least one end thereof having a narrowed opening which is formed precisely in

the configuration of a quench car which is adapted to contain and transport the glowing hot coke. The car is moved over a trackway on wheels and includes a body having a trough shaped lower portion and a trapezoidal



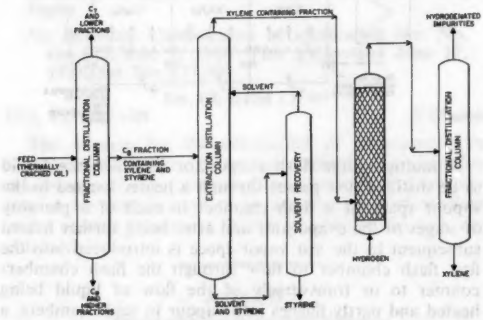
shaped upper portion and the entrance to the quench chamber is defined by a passageway made to the outline of the car so that the car forms a seal with the passageway.

3,684,665

PROCESS FOR RECOVERING STYRENE AND XYLENES FROM CRACKED OIL BY EXTRACTIVE DISTILLATION WITH A DEALKYL ACETAMIDE

Hisao Abe and Masanori Tatsumi, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 11, 1970, Ser. No. 10,640
Claims priority, application Japan, Feb. 17, 1969, 44/11,104; Aug. 26, 1969, 44/66,886
Int. Cl. B07d *3/40;* **C07c** *15/08, 15/10*
U.S. Cl. 203—9 **6 Claims**



Aromatic hydrocarbons are recovered from cracked oil by extractive-distillation. Styrene, particularly, is directly obtained from the cracked oil by extractive-distillation.

3,684,666

COPPER ELECTROPLATING IN A CITRIC ACID BATH

John K. Shaw, Huntington, N.Y., and John B. Romolo, West Roxbury, and Charles Levy, Newton, Mass. (all % Chas. Pfizer & Co., Inc., 235 E. 42nd St., New York, N.Y. 10017)

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,216
Int. Cl. C23b *5/50, 5/18, 5/20*
U.S. Cl. 204—40 **2 Claims**

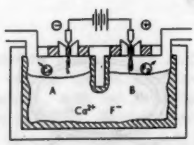
A new method for electroplating copper on an article utilizing aqueous copper salt-citric acid solutions in which citric acid is the principal complexing agent for the copper ion in the solution. Cupric salts are preferred in this invention, especially $CuCO_3 \cdot Cu(OH)_2$ and $CuSO_4 \cdot 5H_2O$, for both plating solutions and strike solutions. For plating the pH range is about 0.4 to 8.9, the cupric ion concentration is about 16 to 64 grams per liter, and the citric acid concentration is about 48 to 192 grams per liter. For strike solutions the pH range is about 1 to 12, the cupric ion concentration is about 3 to 16 grams per liter, and the citric acid concentration is about 20 to 100 grams per liter. The current density is about 1 to 40 amperes per square foot for both plating and strike solutions. This new method avoids the handling problems of using cyanide or mineral acids as the copper complexing agent and gives comparable plating results.

3,684,667

PRODUCTION OF FLUORINE OR VOLATILE FLUORINE COMPOUNDS USING PLASMA JET ANODE

Ian George Sayce, 20 Belvedere Close, Teddington, Middlesex, England

Filed July 27, 1970, Ser. No. 58,581
Claims priority, application Great Britain, Aug. 8, 1969, 39,840/69
Int. Cl. B01k *1/00;* **C22d** *3/06*
U.S. Cl. 204—60 **5 Claims**



A plasma (i.e. an electrically conducting arc or stream of gas) is used as the anode in the electrolysis of molten fluorides, e.g. calcium fluoride, to give fluorine or volatile fluorine compounds.

3,684,668

MANUFACTURE OF CYCLOHEXADIENE-DIOIC ACIDS

Heinz Nohe and Hubert Suter, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,206
Claims priority, application Germany, Oct. 23, 1969, P 19 53 259.3
Int. Cl. C07b *29/06;* **C07c** *51/40, 61/24*
U.S. Cl. 204—73 R **4 Claims**

Manufacture of hexadiene-dioic acids by the electrochemical reduction of benzene-dioic acids in an electrolytic cell containing diaphragms, using a catholyte containing the dioic acid, water and a water-soluble organic solvent, wherein the flow of electrolysis current is periodically interrupted and the cell short-circuited.

3,684,669

ELECTROCHEMICAL REDUCTION OF AROMATIC COMPOUNDS

Joseph S. Matthews, O'Hara Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 6, 1971, Ser. No. 141,016
Int. Cl. C07b *29/06;* **C07c** *5/10*
U.S. Cl. 204—73 R **11 Claims**

A process for electrochemically reducing aromatic compounds in the presence of an aqueous system containing an amine, an ammonium salt or an inorganic acid and a catalyst, such as BF_3.

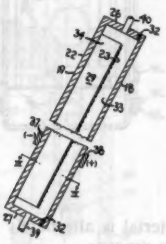
3,684,670
ELECTROLYTIC CELL

Carl W. Raetzsch, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 840,399, July 9, 1969, which is a continuation-in-part of application Ser. No. 795,276, Jan. 30, 1969, now Pat. No. 3,616,444. This application Apr. 19, 1971, Ser. No. 135,407

Int. Cl. B01k 1/00, 3/04; C01b 11/26

U.S. Cl. 204—95 16 Claims



Disclosed is an electrolytic cell for the continuous production of alkali metal chlorates from alkali metal chlorides having a cathode which includes a pervious plate with a surface that is sloped with respect to the vertical. Electrolysis takes place in the area between the anode and the pervious plate. Gaseous products produced adjacent the pervious plate are passed immediately through the openings in the pervious plate and out of the electrolizing area, thereby preventing gas blinding of the electrodes and producing circulation and back mixing of the solution within the cell.

3,684,671

Patent Not Issued For This Number

3,684,672
PROCESS FOR PAPER MANUFACTURE

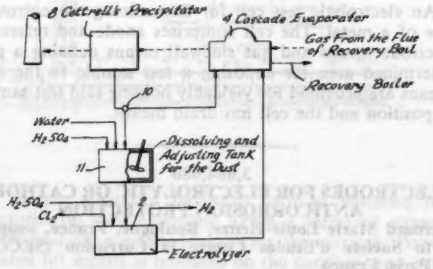
Koji Iwahashi, Nagayo-machi, and Kenji Ueda and Kihei Katsuta, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,389

Claims priority, application Japan, Aug. 7, 1969, 44/62,474

Int. Cl. C01b 7/02; C01d 7/34; D21c 3/26

U.S. Cl. 204—128 7 Claims



Improved kraft paper manufacture is effected by electrolytic removal of chlorine from sodium chloride dust collected in the Cottrell's precipitator installed downstream from a cascade evaporator of the chemical recovery boiler system which processes the pulp cooking liquors for recirculation to the pulp cooking vessel in the kraft paper manufacturing process. The electrolysis of sodium chloride is improved by use of an insoluble anode such as platinum and maintaining electrolyte solution acid by addition of sulfuric acid.

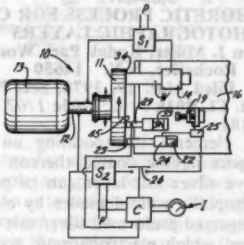
3,684,673
METHOD AND APPARATUS FOR ANALYZING AND CONTROLLING THE CLEANING OPERATION OF AN ELECTROCHEMICAL GRINDING DEVICE

Lester V. Colwell, Ann Arbor, Mich., assignor to Hammond Machinery Builders, Inc., Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 687,848, Dec. 4, 1967. This application June 29, 1970, Ser. No. 50,826

Int. Cl. B23p 1/00, 1/02

U.S. Cl. 204—129.2 23 Claims



The invention relates to an electrochemical grinding machine of the type having (1) a driving unit driving a grinding device in contact with an electrochemically erodable workpiece, said grinding device comprising electrically non-conductive, or substantially non-conductive, abrasive grain embedded in and projecting from an electrically conductive matrix, (2) means for supplying an electrolyte to the zone (interstices between the abrasive grains) between the grinding device and the workpiece and (3) first potential source means for supplying an electrical potential between said grinding device and said workpiece. According to the invention such machine is further provided with (1) a cleaning electrode for cleaning said grinding device, (2) further potential source means for applying an electrical potential between said cleaning electrode and said grinding device and (3) a sensing electrode and circuitry therefor to analyze and control the conditions on the grinding device. Said cleaning electrode is spaced from said workpiece in a direction parallel to the working face of said grinding device and is spaced from said grinding device in a direction perpendicular to the working face thereof. Said last-named potential source means is responsive to the conditions detected by the sensing electrode and circuitry therefor to control the duration of current flow from the last-named potential source means to the cleaning electrode. The last-named potential source means may be of either fluctuating or intermittent nature and of either constant or alternating polarity. The spacing of the cleaning electrode from the grinding device, the conductivity of the electrolyte, the magnitude and polarity of said further potential source means either steady or pulsed, are all chosen and balanced to effect sufficient sparking between said cleaning electrode and said grinding device to keep said grinding device at least substantially free of waste material which can otherwise accumulate thereon but without appreciably eroding said grinding device. Where a deplating mode of cleaning is preferred, appropriate parameters are selected to effect the desired deplating but without excessively exposing the abrasive grain.

3,684,674
PROCESS FOR PREPARING 18-CYANO-PREGNANE COMPOUNDS
Georg Anner, Schaeublinstrasse 91, and Jaroslav Kalvoda, Leimenstrasse 51, both of Basel, Switzerland
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,531
Claims priority, application Switzerland, Apr. 18, 1969, 5,902/69
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 10 Claims

The subject of this application is a new process for the manufacture of 18-cyano-pregnane compounds, especially 11β-hydroxy-18-cyano-20-oxo-pregnane compounds. It is based on the finding that an 11-O nitrite of an 11β,20-dihydroxy-20-cyano-pregnane compound is converted into the corresponding 11β - hydroxy-18-cyano-20-oxo-pregnane compound when irradiated with ultraviolet light. The invention also includes new 18 - cyano-11β-hydroxy-20-oxo-pregnane compounds having pharmacological activities.

3,684,675
ELECTROPHORETIC PROCESS FOR COATING PHOTOGRAPHIC LAYERS
Warren J. Miller, Kodak Park Works, Rochester, N.Y. 14650
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,217
Int. Cl. B01k *5/02*; G03c *1/02*
U.S. Cl. 204—181 8 Claims

Photographic elements incorporating an electrically-conducting support having coated thereon at least one radiation-sensitive silver salt layer can be prepared with little or no hydrophilic colloid binder by electrophoretic deposition of dispersed preformed silver salt crystals from a liquid medium, which electrophoretic coating process can also be used to deposit photosensitive silver salts previously dispersed in a hydrophilic colloid binder.

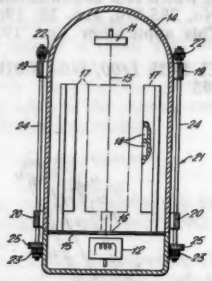
3,684,676
ELECTRODEPOSITION OF WATER-BASED RESINS WITH STABILIZED METAL CHROMATE PIGMENTS
Morris Levine, Cleveland Heights, Ralph M. Brane, Bay Village, and Roland W. Hight, Cleveland, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Original application Apr. 30, 1968, Ser. No. 725,496. Divided and this application Oct. 22, 1970, Ser. No. 83,253
Int. Cl. B01k *5/02*; B32b *15/08*; C23b *13/00*
U.S. Cl. 204—181 5 Claims

Aqueous coating compositions of polycarboxylic acids solubilized with water-soluble alkaline materials and pigmented with metal chromate pigments are stabilized against gelation and seeding by the addition of lead pigment compounds. Metals coated with the compositions are highly resistant to corrosion and the compositions can be coated onto substrates using various methods including dip coating and electrodeposition.

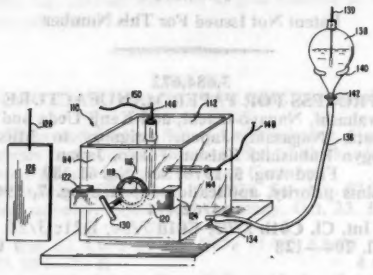
3,684,677
Patent Not Issued For This Number

3,684,678
METHODS OF MACHINING
Geoffrey Beardmore, 20 Oak Manor Drive, and Hugh N. Evans, The Wyastone Hotel, Parabola Road, both of Cheltenham, Gloucestershire, England
Filed Feb. 16, 1970, Ser. No. 11,795
Claims priority, application Great Britain, Feb. 21, 1971, 9,456/69
U.S. Cl. 204—192 12 Claims

The spiral grooving of a thrust-plate of an aerodynamic gas-lubricated bearing is formed by sputtering material from a masked blank, and surface-finishing within the grooving is achieved by cyclic reversal of the sputtering process so that material is alternately removed from and deposited within the grooves.



3,684,679
APPARATUS FOR TESTING THE CORROSION RESISTANCE OF TINPLATE
John R. Smith, 151 Keagle Drive, Steubenville, Ohio 43952, and James A. Bray, Box 225, Bergholz, Ohio 43908
Original application Sept. 8, 1965, Ser. No. 485,790, now Patent No. 3,479,256, Nov. 18, 1969. Divided and this application June 5, 1969, Ser. No. 841,179
Int. Cl. G01n *27/00*, *27/28*
U.S. Cl. 204—195 C 1 Claim

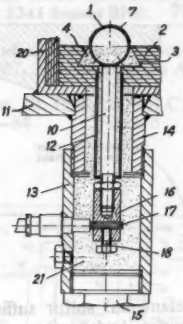


An electrolytic test cell for determining the corrosion rate of a metal. The cell comprises anode and reference electrode means and has sidewall means defining a predetermined area for exposing a test sample to the cell. Means are provided for yieldably holding said test sample in position and the cell has drain means.

3,684,680
ELECTRODES FOR ELECTROLYTIC OR CATHODIC ANTICORROSION PROTECTION
Bernard Marie Louis Heuze, Boulogne, France, assignor to Societe d'Etudes Contre la Corrosion (SECCO), Paris, France
Filed Jan. 8, 1971, Ser. No. 104,974
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 6 Claims

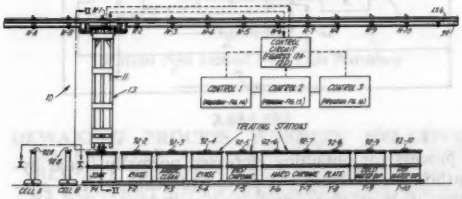
This invention relates to electrodes for use in cathodic or electrolytic anticorrosion protection, particularly for

protecting objects sited in sea water, of the kind comprising one or more tubes made of a suitable metal, such as titanium or tantalum, covered by an active layer of another suitable metal, such as platinum or rhodium. According to the invention, this tube or tubes is/are perforated and housed in a groove of a base member of insulating material, the interengagement being effected by



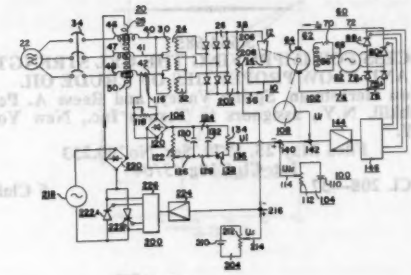
means of an electrically insulating sealing material which penetrates through the perforations in the tube or tubes. Advantageously, the active layer covers only part of the tube. The groove is preferably of such shape as to provide a positive interlock, e.g. it is of dovetail section and, to enhance the anchoring effect, one or more wires passing through opposed perforations in the tube is/are embedded in the sealing material outside the tube.

3,684,681
HANDLING APPARATUS FOR PLATING ARTICLES
Neil F. Dibble, 2262 Greenview Drive, Wyoming, Mich. 49509
Filed July 10, 1969, Ser. No. 840,783
Int. Cl. B08b *3/00*
U.S. Cl. 204—198 **8 Claims**



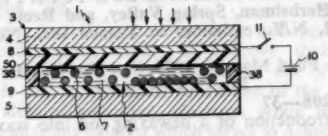
A plating apparatus having a carriage mounted for movement on rails extending along a series of aligned stations and drive means for moving the carriage. Power operated lift means is mounted on the carriage, and control means automatically coordinates the operation of the drive means and the lift means in a preselected pattern. Programming means is connected to said control means and actuates the drive means and the power lift means by means of D.C. signals.

3,684,682
APPARATUS FOR ELECTROLYTICALLY ETCHING A WORKPIECE
Kazushige Koike, Kasugai-shi, Japan, assignor to Mitsubishi Electric Corporation, Tokyo, Japan
Filed June 8, 1970, Ser. No. 44,167
Claims priority, application Japan, June 24, 1969, 44/49,856
Int. Cl. B01k *3/00;* **B23p** *1/04, 1/12*
U.S. Cl. 204—224 **12 Claims**



An apparatus for electrolytically etching a workpiece wherein controls are provided to selectively control the working feed so as to maintain the working current density at a predetermnied value in a working gap and at the same time to maintain the working current in the working gap at a predetermined value.

3,684,683
ELECTROPHORETIC LIGHT IMAGE REPRODUCTION DEVICE
Isao Ota, Osaka-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 13, 1970, Ser. No. 27,474
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **16 Claims**



Electrophoretic light image display and/or recording device is disclosed in which an electrophoretic suspension layer is interposed between two electrodes one of which has a photoconductive layer coupled thereto and faced to said electrophoretic suspension layer, said electrophoretic suspension layer including a dispersion of at least one electrophoretic material in a finely divided powder form suspended in a suspending medium so that of optical reflective property of said electrophoretic suspension layer changes with electrophoretic movement of said electrophoretic material upon application of an electric field. A light image is projected on said photoconductive layer so as to reduce the resistivity thereof, and an electric field is applied between said two electrodes during the reduction of the resistivity of said photoconductive layer, whereby a visible image is reproduced on said electrophoretic suspension layer.

3,684,684

PRODUCTION OF OILS STABLE TO ULTRA-VIOLET LIGHT

Richard L. Coleman, Port Arthur, and Billy H. Cummins and William B. Ashton, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 27,978
Int. Cl. C10g *41/00, 23/02*
U.S. Cl. 208—28 9 Claims

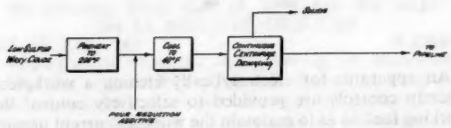
Lubricating oils stable to ultra-violet light and having improved color and viscosity index are prepared by severe hydrogenation, dewaxing and clay contacting lubricating oil fractions.

3,684,685

PROCESS FOR IMPROVING THE GEL STRENGTH AND FLOW PROPERTIES OF CRUDE OIL

Sheldon Herbstman, Spring Valley, and Reese A. Peck, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 25, 1970, Ser. No. 40,233
Int. Cl. C10g *43/04*
U.S. Cl. 208—37 6 Claims



The pipeline flow characteristics and the gel strength of waxy crudes, in particular North African crudes, are improved by centrifuging under specific conditions to remove an optimum amount of wax. In a modification of the process, less than the optimum of wax is removed and a dewaxing aid is added to the crude prior to centrifuging or to the dewaxed crude. The removed wax can be visbroken or thermally cracked, and the resulting fluid can be added to the dewaxed oil.

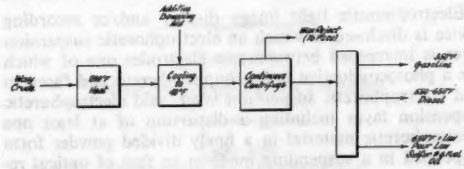
3,684,686

PROCESS FOR OBTAINING LOW POUR FUEL OIL

Sheldon Herbstman, Spring Valley, and Reese A. Peck, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 26, 1970, Ser. No. 40,640
Int. Cl. C10g *43/04*
U.S. Cl. 208—37 6 Claims

The introduction of a dewaxing aid into waxy crudes



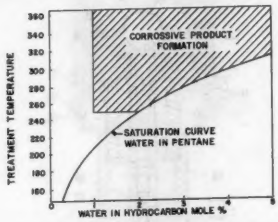
followed by preheating of the crude and the additive prior to dewaxing increases the amount of heavier wax reject stream and the fuel oil (or 650° F. fraction) recovered from the dewaxed crude by fractionation has a reduced pour point. The reduction in pour points ranges from 10° to 35° F.

3,684,687

FRACTIONATION OF LIGHT SULFUR-CONTAINING HYDROCARBONS

Norman L. Carr, Allison Park, and Harry A. Hamilton, Natrona Heights, Pa., and Edward F. Schagrin, Sharon, Mass., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 2, 1970, Ser. No. 7,671
Int. Cl. C10g *19/02*
U.S. Cl. 208—47 7 Claims



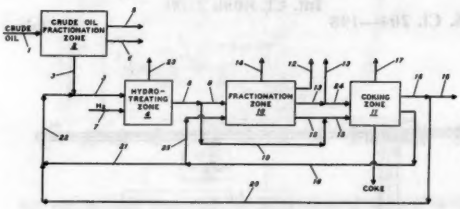
A net amount of elemental sulfur sufficient to cause an otherwise noncorrosive hydrocarbon product to fail the copper strip corrosion test (ASTM D1838–61T) is prevented from forming during thermal processing, such as distillation, of the hydrocarbon product by either (a) maintaining the temperature of the thermal process below about 250° or (b) maintaining the water content of the hydrocarbon product to a level below about 1.0 mole percent, and preferably below about 0.8 mole percent.

3,684,688

HEAVY OIL CONVERSION

Ronald R. Roselius, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 21, 1971, Ser. No. 108,378
Int. Cl. C10b *55/00;* C10g *23/02;* B01d *11/82*
U.S. Cl. 208—50 10 Claims



A process for obtaining increased normally liquid hydrocarbon yields from coking a hydrocarbon feed containing at least three parts per million metals which process comprises: (a) contacting the feed, at elevated temperature and pressure and in the presence of added hydrogen, with a hydrotreating catalyst comprising Group VI and Group VIII metals and an inorganic refractory base, and having at least 50 percent of its pore volume from pores 100 angstroms or larger in pore diameter to obtain a hydrotreated feedstock, and (b) coking at least a portion of the hydrotreated feedstock at a temperature between 700° F. and 1100° F. to obtain solid coke and vaporized normally liquid hydrocarbons. Preferred hydrotreating catalysts for use in the process are obtained by expanding the catalyst during catalyst

production by adding a high molecular weight detergent to the catalyst hydrogel before the hydrogel is dried and calcined. Also, it is preferred to use a common fractionation zone for both the hydrotreating step and the coking step and to eliminate vacuum distillation ahead of the hydrotreating step.

3,684,689

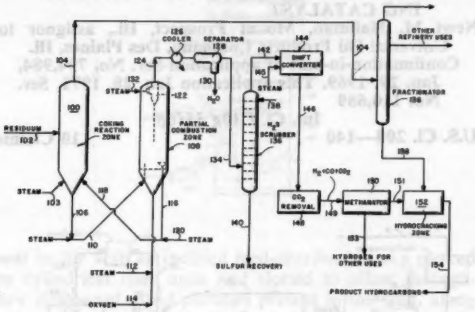
PROCESS FOR PRODUCING LIGHT PRODUCTS FROM HEAVY HYDROCARBONS

John T. Patton, 13010 Queensbury 77024, and Thomas W. Gillette, 2341 Sunset Blvd. 77005, both of Houston, Tex.

Continuation of abandoned application Ser. No. 693,303, Dec. 26, 1967. This application Apr. 12, 1971, Ser. No. 133,329

Int. Cl. C10b *55/00*; C10g *37/06*

U.S. Cl. 208—54 **6 Claims**



A heavy hydrocarbon stream is converted in a high-temperature, high pressure fluidized coker into a distillable, lower-boiling hydrocarbon product oil while producing a coke product. The coke product is converted in a high-pressure, high-temperature, partial combustion reactor into carbon monoxide, by reaction with steam and a small amount of substantially pure oxygen. The carbon monoxide is converted into carbon dioxide in a shift reactor. The hydrogen produced in the water-gas reactor and the shift reactor is preferably used to hydrocrack the lower-boiling hydro-carbon oil product from the coker, or may be used for other purposes such as hydrofining, etc.

3,684,690

Patent Not Issued For This Number

3,684,691

DEWAXING PROCESS WHEREIN RELATIVELY SMALL PORE SIZE CRYSTALLINE ALUMINOSILICATE ZEOLITES ARE USED TO CHEMICALLY CONVERT N-PARAFFINS IN HYDROCARBON OILS

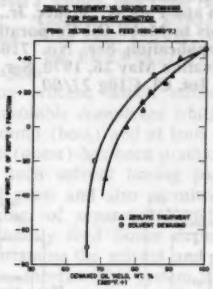
William F. Arey, Jr., 1324 Belvedere Drive, and Glen P. Hamner, 4754 Whitehaven, both of Baton Rouge, La. 70808; Ralph B. Mason, Rte. 2, Box 140, Denham Springs, La. 70726; and James A. Rigney, 47 Roper Drive, Charlottetown, Prince Edward Island, Canada

Continuation-in-part of application Ser. No. 518,680, Jan. 4, 1966. This application Dec. 29, 1969, Ser. No. 888,874

Int. Cl. C10g *13/02, 37/04*; C01b *33/28*

U.S. Cl. 208—59 **11 Claims**

An improved dewaxing process wherein crystalline aluminosilicate zeolites are employed to chemically convert n-paraffins in hydrocarbon oils. The crystalline zeolites are ion exchanged with either hydrogen or one or more metals from Group II–B or both. When the zeolite is of the type 5A, a major portion of the exchanged ions will be of the Group II–B metals. The zeolite may also be combined with a hydrogenation component and contacted with sulfur prior to use. Zinc is the preferred Group II–B metal. The crystalline zeolites are contacted with a hydrocarbon oil in the presence of hydrogen and at elevated temperatures and pressures. Crystalline zeolites having an average, uniform pore size from about 4 to less than 6 angstrom units are disclosed.



3,684,692

PLATINUM-RHENIUM REFORMING ON SUPPORTS OF DIFFERENT CRACKING ACTIVITY

Carl D. Keith, Summit, N.J. (% Engelhard Minerals & Chemicals Corp., 497 Delancy St., Newark, N.J. 07105), and George P. Masologites, Broomall, Pa., and John Mooi, Homewood, Ill. (both % Atlantic Richfield Company, 400 E. Sibley Blvd., Harvey, Ill. 60426)

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,550

Claims priority, application Canada, June 20, 1969, 054,897

Int. Cl. C10g *35/08, 39/00*

U.S. Cl. 208—65 **21 Claims**

A process for reforming naphthene and paraffin-containing hydrocarbon feeds to improve their octane number is disclosed which involves the use of a series of catalytic reaction zones of which one of the first contains an alumina-supported, platinum group metal and rhenium-containing catalyst which serves to dehydrogenate naphthenes and one of the last of which zones contains a platinum group metal and rhenium-containing catalyst on a porous, acidic oxide support, the latter catalyst serving to dehydrocyclize paraffins.

3,684,693

SERIAL REFORMING WITH PLATINUM CATALYST IN FIRST STAGE AND IRIDIUM, RHODIUM, RUTHENIUM OR OSMIUM CATALYST IN SECOND STAGE

John H. Sinfelt, 296 Chaucer Drive, Berkeley Heights, N.J. 07922

No Drawing. Filed May 28, 1970, Ser. No. 41,613

Int. Cl. C10g *35/06, 39/00*

U.S. Cl. 208—65 **14 Claims**

A conventional reforming catalyst, such as platinum-alumina, is used in the initial zone or reactors in a catalytic reforming process; the tail zone or reactors contains a noble metal from the first or second subgroups of Group

VIII, designated $VIII_1$ and $VIII_2$, of the Periodic Table, supported on a suitable refractory carrier. In a preferred embodiment, the tail zone contains an iridium catalyst on a porous support such as alumna.

3,684,694

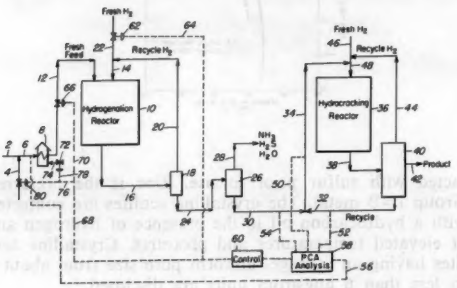
METHOD OF CONTROLLING INTERACTION BETWEEN PRETREATING AND HYDROCRACKING STAGES

Francis V. Hanson and Paul W. Snyder, Jr., Pitman, N.J., assignors to Mobil Oil Corporation

Continuation of application Ser. No. 710,901, Mar. 6, 1968. This application May 26, 1970, Ser. No. 41,702

Int. Cl. C10g *23/00*

U.S. Cl. 208—89 **5 Claims**



A method of determining and controlling the concentration of polycyclic aromatic compounds in various hydrocarbon streams of a multi-stage process comprising pretreating and hydrocracking is described. The method comprises employing ultraviolet and visible light to determine the concentration of three or more condensed-ring polycyclic aromatics in hydrocarbon streams and in response to the measured concentration of condensed-ring polycyclic aromatics, control means are operated to vary the raw feed composition to the process comprising feed pretreat followed by hydrocracking thereof, the conditions employed in the pretreat stage so as to control the concentration of polycyclic aromatics in the effluent therefrom and the concentration of polycyclic aromatics in the hydrocarbon charge to the hydrocracking stage of the process particularly when recycle produce of the hydrocracking step is returned thereto.

3,684,695

HYDROCRACKING PROCESS FOR HIGH VISCOSITY INDEX LUBRICATING OILS

Emmanuel E. A. Neel, Michel Gaucher, and Claude J. Clement, all % Centre de Recherche Shell Berre, Grand Couronne, France

No Drawing. Filed Feb. 9, 1971, Ser. No. 113,925

Claims priority, application France, Mar. 9, 1970, 7008323

Int. Cl. C10g *13/02, 37/10*

U.S. Cl. 208—110 **10 Claims**

A process for the manufacture of high viscosity index base oils by hydrocracking a high boiling hydrocarbon feedstock, e.g., deasphalted residual oil, over a catalyst containing nickel and molybdenum hydrogenating components and phosphorous oxide on a refractory oxide support, e.g., alumina or silica-magnesia, and recovering from the liquid product at least one lubricating oil fraction boiling in the range from about 350° to 550° C.

3,684,696

Patent Not Issued For This Number

3,684,697

PETROLEUM COKE PRODUCTION

Bernard William Gamson, 129 S. Alta Vista Blvd., Los Angeles, Calif. 90036

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,319

Int. Cl. C10g *9/14*

U.S. Cl. 208—131 **12 Claims**

Petroleum sponge coke is produced from hydrocarbon feedstock which forms shot coke in a conventional delayed coking process by blending the feedstock with another feedstock relatively free of asphaltene to form a blended feedstock having an asphaltene content below about 15%.

3,684,698

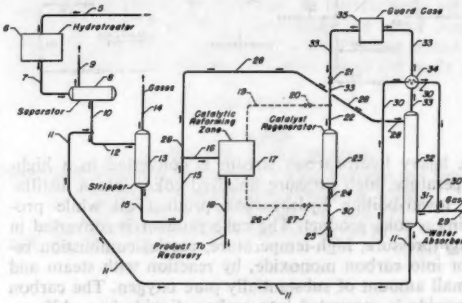
METHOD FOR CONDITIONING A WET REGENERATED PLATINUM REFORMING CATALYST

Newt M. Hallman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 794,984, Jan. 29, 1969. This application Jan. 28, 1971, Ser. No. 110,689

Int. Cl. C10g *35/08*

U.S. Cl. 208—140 **10 Claims**



A method for conditioning a wet, regenerated platinum catalyzed reforming system which comprises contacting the wet, regenerated catalyst with a dry gaseous medium prepared by the passage of a wet gaseous medium to a water absorption zone containing a naphtha desiccant, The gaseous medium may be nitrogen, hydrogen or flue gas.

3,684,699

PROCESS FOR RECOVERING OIL FROM TAR-OIL FROTHS AND OTHER HEAVY OIL-WATER EMULSIONS

Theodore Vermeulen, Berkeley, and Michael John Keaton, Piedmont, Calif., assignors to The Regents of the University of California

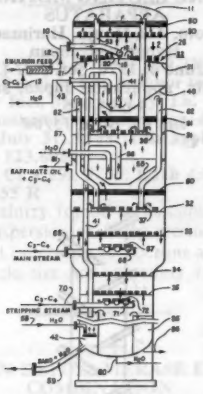
Filed Feb. 10, 1971, Ser. No. 114,141

Int. Cl. C10g *33/04, 21/00*; C10c *1/18*

U.S. Cl. 208—188 **6 Claims**

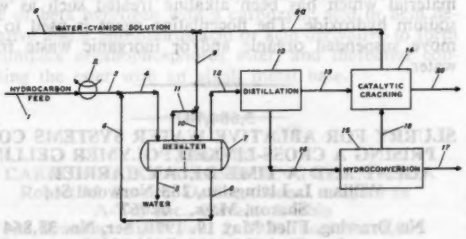
Tar-oil froths and other heavy oil-water emulsions are demulsified by the addition of a propane-butane solvent at or above the condensation pressure thereof, and at temperatures in a range of 170° to 240° F., the proportions used ranging from about 0.5 to 10 volumes of the solvent per volume of oil contained in the feed emulsion. The coalesced water phase and one or more oil phases,

along with sand particles, are thereafter separated and recovered. When using about 3.5 to 10 volumes of the solvent per volume of oil, the emulsion may be broken and separated into a water phase and into raffinate oil and asphaltic fractions of controllable quantity and purity. When using 0.5 to 2 volumes of the solvent per volume of oil, the oil is dehydrated but not deasphalted. The several demulsification and product separation steps can be practiced in a pressure column which is provided



near its top with an inclined feed-distribution tray pierced by cylindrical riser units and slotted to allow through-flow downward. Sand particles present in the feed, along with water and optionally asphalt, pass downwardly through the tray for discharge into one or more gravity-settling chambers, while the remaining oil components of the emulsion are carried upwardly either for discharge from the column or for return to a lower portion thereof for second-stage gravity-settling or for deasphalting.

3,684,700
IRON REMOVAL
Gordon E. Langlois, Lafayette, Lloyd J. Olson, Oakland, and Charles E. Rudy, Jr., El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 766,650, Oct. 10, 1968, now Patent No. 3,562,151. This application Sept. 2, 1970, Ser. No. 69,044
The portion of the term of the patent subsequent to Feb. 9, 1988, has been disclaimed
Int. Cl. C10g *17/00, 29/00*
U.S. Cl. 208—251 **9 Claims**

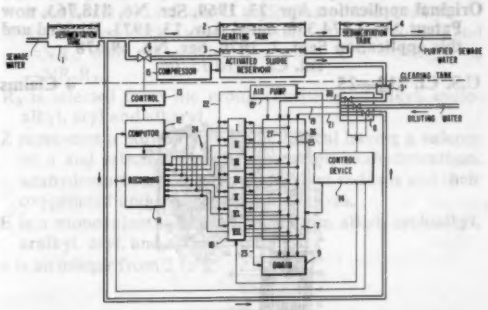


A process for simultaneously desalting a hydrocarbon feedstock and removing iron present in the hydrocarbon feedstock as a soluble organometallic compound which comprises contacting the feedstock with an aqueous solution containing cyanide ion and then separating an aqueous brine phase from the hydrocarbon feedstock. Preferably, the aqueous solution contains in addition to cyanide ion a reducing agent such as ammonium sulfide and preferably the feed is a crude oil or a residuum fraction.

3,684,701
ADDUCTING SLURRY PROMOTERS
Everett J. Fuller, 666 Long Hill Road, Gillette, N.J. 07933
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,923
Int. Cl. C07b *21/00*
U.S. Cl. 208—308 **17 Claims**

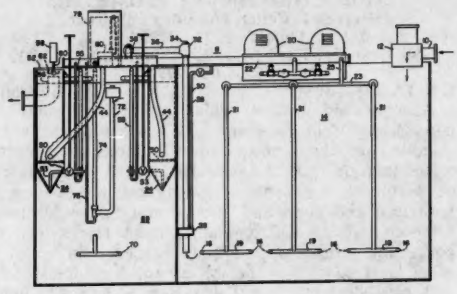
A separation process, which utilizes inclusion compounds, e.g. insoluble complexes which form between a suitable compound (host) and at least one constituent of a feed mixture (guest) has been practiced in the presence of a solvent, such solvent having partial solvency for both host and guest and also permitting the formation, after complexing, of separated liquid layers, i.e., one containing primarily feed liquor depleted in guest, the other layer containing the solvent and a complex of host and guest slurry therein. This system is, however, limited in certain cases with regard to equilibrium. That is to say, once a given amount of guest has been complexed with the host equilibrium limitations prevent any additional complex from forming. The equilibrium problem is solved by adding to the system a compound which forms a complex with the host and dissolves preferentially in solvent, so that such compound will remain with the solvent and eliminate or reduce the requirement that it be removed from depleted feed in a separate operation.

3,684,702
METHOD AND APPARATUS FOR DETERMINING THE BIOCHEMICAL DECOMPOSABILITY OF SEWAGE
Ludwig Hartmann, Schneidermuhler Str. 15B, Karlsruhe, Germany
Filed Jan. 29, 1971, Ser. No. 110,911
Claims priority, application Germany, Feb. 19, 1970, P 20 07 727.4
Int. Cl. C02c *1/06*
U.S. Cl. 210—3 **12 Claims**



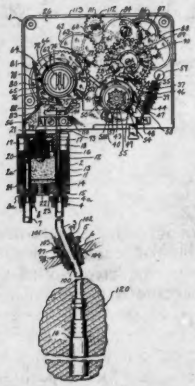
Test samples of incoming sewage are mixed with relatively large samples of activated sludge from previously treated sewage and under controlled conditions the biological oxygen demand is measured in a short period of time. On the basis of this measurement the recycling of activated sludge to the main sewage aerating tanks can be accurately calculated and controlled to provide for the optimum biological decomposition of the sewage. The testing can be frequently repeated to constantly monitor the quality of the incoming sewage to provide updated information to effectively control the decomposition of the sewage under optimum conditions.

3,684,703
SEPARATION PROCESS AND APPARATUS
Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of application Ser. No. 715,636, Mar. 25, 1968. This application Sept. 8, 1970, Ser. No. 69,896
Int. Cl. B03d *1/00*
U.S. Cl. 210—13 4 Claims



The treatment system of this invention includes a process and apparatus for sequentially subjecting particulate matter in a liquid medium to comminution, aeration, flotation and digestion or incineration. Aeration prepares the particulate matter so that the influent to a flotation cell is of a proper size and consistency for maximum separation and minimum detention under the action of minute gas bubbles of the size produced by electrolysis in the flotation cell. The solid particles which are thereby carried to the surface of the flotation cell are periodically overflowed into a digester or incinerator by closing the plant effluent line which carries the clearified liquid from the plant. A modular design is utilized to allow for expanding system's requirements.

3,684,704
PROCESS FOR DETECTING ION CONCENTRATION
David G. Prosser, Mequon, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.
Original application Apr. 23, 1969, Ser. No. 818,763, now Patent No. 3,574,330, dated Apr. 13, 1971. Divided and this application Sept. 2, 1970, Ser. No. 69,078
Int. Cl. B01d *15/06*
U.S. Cl. 210—25 4 Claims



A process for detecting the ion concentration in a liquid wherein a given quantity of an ion exchange resin which is responsive to the ion content of a liquid by a change in its volume is subjected to a washing by a sample of the liquid the ion concentration of which is to be detected and applying a mechanical means to detect a change in the volume of the given quantity of the ion exchange resin to detect the ion concentration of the liquid with which it was washed.

3,684,705
MATERIAL ELUTING METHOD AND APPARATUS
Tetsuo Matsumoto, 411 Honjo, Harimacho, Kako-gun, Hyogo-ken, Japan
Filed June 4, 1970, Ser. No. 43,392
Claims priority, application Japan, June 6, 1969, 44/44,955
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C 15 Claims

Materials are separated by means of carriers consisting of a porous material having cross-linked pores by allowing the carriers to pass through a plurality of interfaces between a plurality of liquids and fall through said plurality of the liquids, and separating the material present in said liquids from the carriers owing to a difference in flow resistance of the materials to said cross-linked pores.

3,684,706
WASTE TREATMENT WITH MICROBIAL NUCLEOPROTEIN FLOCCULATING AGENT
Ralph A. Bomstein, 3915 Tonkawood Road, Hopkins, Minn. 55343
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,958
Int. Cl. C02b *1/20*
U.S. Cl. 210—47 10 Claims
A flocculating agent is disclosed including microbial material which has been alkaline treated such as with sodium hydroxide. The flocculating agent is used to remove suspended organic and/or inorganic waste from water.

3,684,707
SLURRY FOR ABLATIVE WATER SYSTEMS COMPRISING A CROSS-LINKED POLYMER GELLING AGENT AND A TIME DELAY CARRIER
William L. Livingston, 283 Norwood St., Sharon, Mass. 02067
No Drawing. Filed May 19, 1970, Ser. No. 38,864
Int. Cl. A62d *1/00*; B01j *13/00*
U.S. Cl. 252—2 9 Claims
Preparation of ablative water for application in automatic sprinkler systems is facilitated when using solid, particulate gelling agents by storing a slurry of the gelling agent in a carrier liquid for subsequent mixing with water

when the formation of an ablative water system is required to combat fire. The uniform admixture of gelling agent with water to provide ablative water consisting of a uniform gel is implemented by the use of a slurry comprising a particular carrier.

3,684,708

Patent Not Issued For This Number

3,684,709

COMPLETION FLUID

Smith Alpha, Berwick, La., assignor to Silver Lining, Inc., Morgan City, La.

No Drawing. Continuation of abandoned application Ser. No. 748,939, July 31, 1968. This application Mar. 12, 1971, Ser. No. 123,808

Int. Cl. C09k *3/00;* **E21b** *43/00*

U.S. Cl. 252—8.55 R **5 Claims**

A completion slurry for oil wells consisting essentially of an aqueous dispersion of finely ground oyster shell of a particle size not exceeding 10 microns and finely ground barite of a particle size not exceeding 10 microns.

3,684,710

MANNAN DEPOLYMERASE ENZYME COMBINATION

Theodore Cayle, Morganville, N.J., and Hans Schleich, Staten Island, N.Y., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation-in-part of application Ser. No. 538,409, Mar. 29, 1966. This application Dec. 19, 1969, Ser. No. 886,537

Int. Cl. E21b *43/25*

U.S. Cl. 252—8.55 R **9 Claims**

A dry enzyme composition having improved pH-stability and pH-activity characteristics in aqueous solution consisting of a galactomannan polymer in combination with a mixture of mannan depolymerase enzyme components from *B. subtilis* and *A. niger* microorganisms.

3,684,711

ANTIOXIDANT FOR ESTER BASE FUNCTIONAL FLUIDS

Quentin E. Thompson, Belleville, Ill., and Stanley L. Reid and Richard W. Weiss, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,139

Int. Cl. C10m *1/46*

U.S. Cl. 252—32.5 **13 Claims**

The oxidation resistance of synthetic ester based lubricants is enhanced by incorporating in the lubricant small amounts of a complex alkali metal organophosphorus compound prepared by esterifying a polyhydric alcohol free of beta hydrogen with a carboxylic acid or acid derivative and a phosphorus acid or acid derivative to form a complex organophosphorus ester, and thereafter contacting the ester with an alkali metal base.

3,684,712

CARBON DIOXIDE ABSORBING CHEMICAL

Robert M. Bovard, De Soto, Kans., assignor to A-T-O Inc., Cleveland, Ohio

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,093

The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed

Int. Cl. B01j *11/32*

U.S. Cl. 252—45 F **7 Claims**

A carbon dioxide absorption composition having controlled water solubility characteristics and caustic hazard suitable for utilization in marine and submarine environments is provided comprising a body having a core of lithium hydroxide monohydrate and an outlet layer of magnesium oxide, or other alkaline earth oxide, or lithium hydroxide monohydrate modified alkaline earth oxide. The magnesium oxide permits permeation by carbon dioxide, but excludes water from the core. In addition, the magnesium oxide is activated by lithium hydroxide and thus serves itself to effectively absorb carbon dioxide.

3,684,713

COMPOSITIONS CONTAINING OIL-SOLUBLE AZO COMPOUNDS

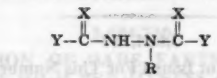
Richard J. Piccolini, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Original application Apr. 11, 1968, Ser. No. 720,458, now Patent No. 3,634,493, dated Jan. 11, 1972. Divided and this application July 22, 1970, Ser. No. 57,349

Int. Cl. C10m *1/38, 1/32*

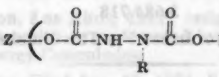
U.S. Cl. 252—47.5 **7 Claims**

Lubricating oil and/or liquid fuel compositions contain oil-soluble azo compounds. The azo compounds impart to the compositions improved dispersant characteristics, corrosion inhibition and anti-wear properties. The predominant oil-soluble azo reaction product may be represented by the following formulas:



(I)

or



(II)

wherein

R represents an oil-solubilizing, synthetic, polymeric organic radical containing at least 20 carbon atoms,

Y is independently selected from the group consisting of $—OR_1$, $—NR_2R_3$ and $—SR_4$,

R_1, R_2, R_3, and R_4 are independently selected from hydrogen, alkyl, cycloalkyl, aryl, alkaryl and aralkyl,

X is independently selected from oxygen, sulfur and $=NR_5$, with the proviso that when X is $=NR_5$, Y is $—NR_2R_3$,

R_5 is selected from the group consisting of alkyl, cycloalkyl, aryl and alkaryl,

Z represents a polyvalent organic radical having a valence of *n* and selected from hydrocarbon, oxahydrocarbon, azahydrocarbon and thiahydrocarbon radicals and their oxygenated and halogenated derivatives,

E is a monovalent radical selected from alkyl, cycloalkyl, aralkyl, aryl, and alkaryl, and

n is an integer from 2 to 5.

3,684,714

CERAMIC BODIES FOR ELECTROMECHANICAL TRANSDUCERS

Klaus Fredrich Leonhard Carl, and Karl Heinz Hardtl, Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,074

Claims priority, application Germany, July 29, 1970, P 20 37 643.6

Int. Cl. C04b *35/46, 35/48, 35/50*

U.S. Cl. 252—62.9 **3 Claims**

Ceramic bodies for use in electromechanical transducers consisting mostly of lanthanum oxide containing

solid solutions of lead zirconate and lead titanate having a composition defined by the formula

$$Pb_{1-1.5y}La_y(Zr_xTi_{1-x})O_3$$

wherein

$0.55 \leq x \leq 0.62$ and $(0.3x-0.118) \leq y \leq (0.3x-0.094)$

3,684,715

PIEZOELECTRIC OXIDE MATERIALS

Noboru Ichinose, Harutoshi Egami, Katsunori Yokoyama, and Yohachi Yamashita, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 31, 1971, Ser. No. 129,676
Claims priority, application Japan, Apr. 1, 1970, 45/26,968; Oct. 12, 1970, 45/88,806
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **2 Claims**

A basic ternary piezoelectric oxide material consisting of 0.5 to 50 mol percent $Pb(Me_{1/2}Te_{1/2})O_3$ (Me denotes at least one metal selected from the group consisting of Ni, Co and Mn), 30.0 to 60.0 mol percent $PbTiO_3$ and 15.0 to 55.0 mol percent $PbZrO_3$ and another type of piezoelectric oxide material wherein 20.0 atom percent max. of the Pb in said basic ternary oxide piezoelectric material is substituted by at least one metal element selected from the group consisting of Ba, Sr and Ca.

3,684,716

Patent Not Issued For This Number

3,684,717

Patent Not Issued For This Number

3,684,718

Patent Not Issued For This Number

3,684,719

METHOD OF STRIPPING THE OXIDE FILM FROM A ZINC SURFACE

Samuel S. Frey, 14 Melrose Terrace, Elizabeth, N.J. 07208

No Drawing. Continuation-in-part of application Ser. No. 447,089, Apr. 9, 1965. This application Dec. 27, 1968, Ser. No. 787,589
Int. Cl. C09k *3/00*
U.S. Cl. 252—79.3 **4 Claims**

A process to remove oxide film from zinc surfaces comprising a bath containing a water soluble inorganic ferric salt, sulfuric acid or bisulfate salt, and a water soluble inorganic fluoride salt.

3,684,720

REMOVAL OF SCALE FROM SURFACES

Darwin W. Richardson, Richardson, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

No Drawing. Filed Mar. 6, 1970, Ser. No. 17,342
Int. Cl. C02b *5/06*
U.S. Cl. 252—86 **23 Claims**

A method of removing scale from surfaces such as piping and other equipment by treating the scale with a solution containing a scale converting agent and a chelating agent. The scale converting agent will ionize the scale material and the chelating agent will sequester ions of the scale very rapidly. For example, when removing calcium sulfate scale, the treating solution can contain ammonium bicarbonate as a scale converting agent and a di- or triammonium salt of ethylene-diamine tetraacetic acid as the chelating agent.

3,684,721

Patent Not Issued For This Number

3,684,722

THICKENED ALKALI METAL HYPOCHLORITE BLEACHING AND CLEANING COMPOSITION

Brian Michael Hynam, Wirral, England, John Leslie Wilby, Maarssen, Netherlands, and John Ralph Young, Bromborough, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,691
Claims priority, application Great Britain, Aug. 29, 1969, 43,235/69; May 26, 1970, 25,098/70
Int. Cl. C11d *7/54, 9/30, 9/44*
U.S. Cl. 252—98 **6 Claims**

Aqueous alkali-metal hypochlorite solutions incorporating mixtures of C_8–C_{18} alkali-metal soaps and hydrotropes, generally amine oxides and betaines, and thereby having increased viscosities, are disclosed. The thickened solutions possess enhanced cleansing and disinfecting abilities. The perfuming of these thickened solutions is also disclosed.

3,684,723

DETERGENT COMPOSITION

Peter Best and Othmar Friedrich Schweigl, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 729,120, May 14, 1968. This application Feb. 11, 1971, Ser. No. 114,728
Int. Cl. C11d *9/22*
U.S. Cl. 252—132 **3 Claims**

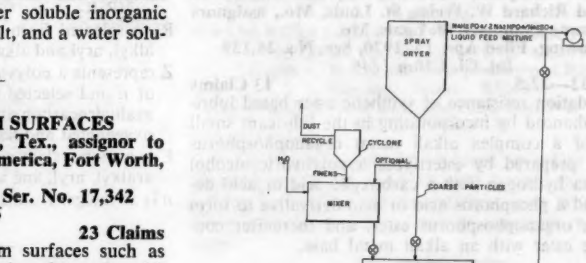
A low-foaming detergent composition containing an anionic detergent, a builder salt and either a C_{8-25} fatty acid soap, a foam-depressant nonionic detergent or a mixture of the soap and the nonionic detergent is improved by the addition of 0.5 to 10% by weight of the composition of certain diethers of polyalkylene oxide diols that have a high-temperature foam depressant action. The composition can also contain a perborate bleach.

3,684,724

PROCESS FOR MAKING MIXTURES OF SODIUM POLYPHOSPHATES AND SODIUM SULFATE

James N. Dyer and Leo B. Post, New City, and Herbert J. Rosen, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 857,393, Sept. 12, 1969. This application Apr. 20, 1970, Ser. No. 30,201
The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed
Int. Cl. C01b *25/38;* **C11d** *3/06, 7/16*
U.S. Cl. 252—135 **9 Claims**



Mixtures of sodium sulfate and sodium polyphosphates, particularly, sodium tripolyphosphates are prepared in low bulk density, high relatively non-frangible, granular yields by spray drying an aqueous solution of monosodium/di-

sodium orthophosphate salts having an $Na_2O:P_2O_5$ ratio of from 1 to 2, and sodium sulfate in combinations of 10% to 90%, hydrating the spray dried product or the fines to a LOI of between about 10% and about 50% and intermolecularly dehydrating the hydrated product in a fluidized converter at a temperature of between about 200° C. and 500° C. to provide the desired product. The product of the process is useful as a detergent builder.

3,684,725

Patent Not Issued For This Number

3,684,726

LUBRICATING GREASE

Alfred Romuald Haak, 2105 Meckelfeld, Mohnweg 11, Germany, and Wolfgang Stichnoth, 15 Muhlenstrasse, 2000 Hamburg 70, Germany

No Drawing. Filed June 6, 1969, Ser. No. 831,223

Claims priority, application Germany, June 22, 1968, P 17 69 651.4

Int. Cl. C10m *5/22, 5/16*

U.S. Cl. 252—33.2 **5 Claims**

Lubricating greases comprised of a metal soap and a major amount of mineral oil are improved in their anti-corrosion properties by including in them synergistic mixtures of a barium alkaryl sulfonate wherein the alkaryl group has a molecular weight between 330 and 430 and a naphthenate salt of zinc, lead, lithium or magnesium.

3,684,727

DOPED CALCIUM FLUORIDE AND STRONTIUM FLUORIDE PHOTOCHROMIC COMPOSITIONS

William Phillips, Princeton, N.J., assignor to RCA Corporation

Filed Jan. 31, 1969, Ser. No. 795,645

Int. Cl. G02b *5/20;* **F21v** *9/02*

U.S. Cl. 252—300 **9 Claims**

The photochromic properties of CaF_2 and SrF_2 containing La are enhanced by the addition of Na or K thereto. The photochromic material is prepared by slowly cooling in a temperature gradient, a melt comprising the appropriate ratios of the various metal fluorides in the presence of a seed crystal. The as-grown material is then treated either under gamma irradiation or in a reducing atmosphere.

3,684,728

OPTICAL BRIGHTENING PREPARATIONS

Bruno Kissling, Grenzacherweg 313, Riehen, Basel-Land, Switzerland, and Helmut Pummer, Jurastrasse 6, Therwil, Basel-Land, Switzerland

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,334

Claims priority, application Switzerland, Sept. 12, 1969, 13,802/69; July 15, 1970, 10,733/70

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 W **10 Claims**

This invention relates to optical brightening preparations which consist of an anionic optical brightener and a water soluble polyamide amine or a polyether amine in the weight ratio of 1:0.1 to 1:15 or preferably 1:0.15 to 1:0.6 or 1:3 to 1:11.

3,684,729

BRIGHTENER COMPOSITIONS

Robert J. Tuite, Kodak Park, Rochester, N.Y. 14650

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,364

Int. Cl. C09k *1/02;* **G03c** *1/92*

U.S. Cl. 252—301.2 W **6 Claims**

Hydrophilic colloids having intimately dispersed therein an essentially hydrophobic solid solution of an oil-soluble brightening agent in an essentially hydrophobic organic solvent that is rigid (an organic glass) at room temperature, i.e., has a glass transition temperature (Tg) that is above about 25° C. and is a polymer that is an acetal condensation product of polyvinyl alcohol and an aldehyde or ketone having from 2 to 40 carbon atoms are advantageously used in photographic elements and in image receiving elements for image diffusion transfer because the light-stability of the brightening agents in these dispersions is increased substantially over the light-stability of the same brightening agents in dispersions outside the immediate invention.

3,684,730

PREPARATION OF RARE EARTH OXIDE PHOSPHORS OF HIGH BRIGHTNESS AND CATHODOLUMINESCENT EFFICIENCY

Leon E. Sobon, Los Altos, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,974

Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 R **9 Claims**

Optimized procedure wherein an acidic chloride solution of a rare earth oxide host and a second rare earth activator in selected concentrations and at a particular pH is prepared, wherein the chloride solution is added to an oxalic acid solution to coprecipitate uniform proportions of the two rare earths as oxalates, wherein the solution is stirred at a particular temperature for a time period requisite to produce a desired particle form, wherein the precipitate is filtered hot, is dried and finally is calcined at an elevated temperature to produce the phosphor. The step of adding the chloride solution to the oxalic acid solution rather than the reverse is critical to produce a phosphor of highest brightness efficiency.

3,684,731

PROCESS FOR PREPARING COPPER RESISTANT SILVER ACTIVATED ZINC SULFIDE PHOSPHORS

James O. Frey, Towanda, and Henry B. Minnier, Dushore, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,312

Int. Cl. C09k *1/12*

U.S. Cl. 252—301.6 S **6 Claims**

An improvement in the process for preparing silver-activated zinc sulfide phosphors, which imparts to the phosphor a copper resistance, which comprises adjusting the pH of the phosphor-water wash slurry from about 7.5 to about 9.5 and agitating for a given period of time, before filtering and drying the phosphor.

3,684,732

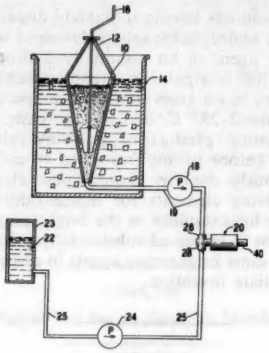
PROCESS FOR PRODUCING A FORMABLE COLLAGEN DISPERSION

Joseph J. Grabauskas, Chicago, Ill., assignor to Union Carbide Corporation

Original application Oct. 11, 1967, Ser. No. 674,575. Divided and this application Apr. 29, 1969, Ser. No. 851,508

Int. Cl. B01j *13/00*

U.S. Cl. 252—311 8 Claims



An air-free collagen slurry can be mixed with an air-free swelling agent and the mixture can then be subjected to shearing action to obtain a uniformly swollen collagen dispersion from which collagen structures can be subsequently fabricated.

3,684,733

GELATION OF LIQUID HYDROCARBONS

William W. Bannister, Chelmsford, John R. Pennace, Somerville, and William A. Curby, Newton, Mass. (all % Alice Sias Memorial Laboratory, 211 Summit Ave., Brookline, Mass. 02146)

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,634

Int. Cl. B01j *13/00*; C10l *7/00*

U.S. Cl. 252—316 6 Claims

A method for gelling normally liquid hydrocarbons, and the compositions produced by the method, wherein normally liquid hydrocarbons are mixed with primary or secondary amines and reacted with carbon dioxide (in some cases requiring a catalytic amount of water).

3,684,734

POLYMERS OF ALKYLENE OXIDES AS CRUDE OIL DEMULSIFIERS

Gert Liebold, Mannheim, and Knut Oppenlaender, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,028

Claims priority, application Germany, Aug. 13, 1969, P 19 41 173.5

Int. Cl. B01d *17/04*

U.S. Cl. 252—342 4 Claims

The use of derivatives of block copolymers of ethylene oxide and of 1,2-propylene oxide as demulsifiers for crude oil emulsions; mainly those derivatives are used which are obtained by reacting the polymers with hydroxy carboxylic acids.

3,684,735

CRUDE OIL DEMULSIFIERS

Knut Oppenlaender, 23 Otto-Dill-Strasse, 6700 Ludwigshafen, Germany– Gert Liebold, 6 Gontardstrasse, 6800 Mannheim, Germany; Rudolf Mohr, 11 Hans-Holbein-Strasse, 6840 Lampertheim, Germany; and Egon Buettner, 16 Wolframstrasse, and Karl Matschat, 9 Kranichstrasse, both of 6700 Ludwigshafen, Germany

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,572

Claims priority, application Germany, Mar. 23, 1970, P 20 13 820.9

Int. Cl. B01d *17/04*

U.S. Cl. 252—342 5 Claims

Demulsifiers based on mixtures of polyoxyalkylated compounds, a process for their manufacture and their use for breaking water-in-oil emulsions at ambient temperatures.

3,684,736

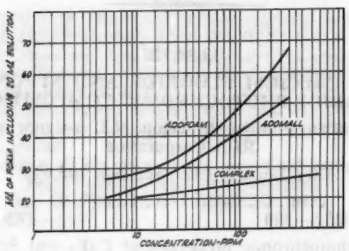
LOW-FOAMING SURFACE ACTIVE COMPOSITIONS AND METHOD OF PREPARING SUCH COMPOSITIONS

William L. Groves, Jr., 715 N. 7th, and Robert L. Huddleston, 1625 Meadowbrook, both of Ponca City, Okla. 74601

Filed Sept. 10, 1970, Ser. No. 70,980

Int. Cl. B01f *17/00, 17/18*

U.S. Cl. 252—355 2 Claims



A surface active agent produced by combining an anionic surfactant, viz, an anionic ammonium ether sulfate compound, with a cationic surfactant, viz, dodecylbenzyltrimethylammonium chloride, to form an electroneutral complex of low solubility in water, and preferably utilized as an aqueous suspension containing less than 1 weight percent of the complex.

3,684,737

COATING COMPOSITION FOR INDICATING STERILIZATION

John H. Emigh, Monrovia, Calif., assignor to Mask-Off Company, Monrovia, Calif.

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,946

Int. Cl. C09k *3/00*; G01n *33/00*

U.S. Cl. 252—408 6 Claims

Coating compositions for use in indicating sterilization by ethylene oxide, steam or dry heat are disclosed. These

compositions include a halide salt of a metal selected from the group consisting of iron, cobalt and nickel, a pigment which will accentuate so as to make more easily visible any change in color resulting from reaction of such salt, and a binder material which will suspend and hold the salt and the pigment in proximity with one another.

3,684,738

REACTIVATION OF DEACTIVATED ZEOLITE CATALYSTS

Nai Y. Chen, Titusville, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,033
Int. Cl. B01j *11/02, 11/30*
U.S. Cl. 252—412 2 Claims

Crystalline aluminosilicate catalysts characterized by a silica to alumina mole ratio of greater than about 6 and a pore size ranging from about 5 to about 13 angstrom units lose their activity after considerable use in hydrocarbon conversion reactions and are regenerated by contact, under particularly defined conditions, with a source of hydrogen ions or hydrogen ion precursors.

3,684,739

POLYMERIZATION OF OLEFINIC COMPOUNDS AND CATALYSTS THEREFOR

Edward H. Mottus, 350 Claymont Drive, Ballwin, Mo. 63011, and Morris R. Ort, 1018 Edgeworth, Kirkwood, Mo. 63122

Application Mar. 2, 1967, Ser. No. 621,036, which is a continuation-in-part of application Ser. No. 539,662, Apr. 4, 1966. Divided and this application Mar. 10, 1970, Ser. No. 23,111
Int. Cl. C08d *1/14*
U.S. Cl. 252—429 A 34 Claims

An electrolytic process is described for making certain bis-(halometal)methanes such as bis(dichloroaluminum)-methane, $Cl_2AlCH_2AlCl_2$, which is a new compound, and these compounds can be combined with transition metal compounds such as $VOCl_3$ to make very active catalysts for polymerizing olefinic compounds such as ethylene. In the electrolytic process boron, a Group II, Group III–A or Group IV–A metal, e.g., aluminum, is used as an anode with an electrolyte such as $HOAlCl_2$ in the presence of a methylene dihalide such as CH_2Cl_2 or a gem dihalide which does not readily dehydrohalogenate or alkylate. It is preferred to carry out the electrolysis in the presence of ethylene or another olefinic compound to promote conductivity. Also, it is preferred that all reactants be substantially free of water, except for small known amounts of water which may be added to promote electrolysis. Also, it is preferred to blanket the electrolysis with ethylene which also serves to promote conductivity, or an inert gas to exclude moisture, oxygen and other undesirable materials. The catalysts polymerize olefinic compounds to liquid or solid polymers depending on the particular catalyst used and the olefin being polymerized. The catalysts are promoted or modified by small amounts of water or other electron donor compounds.

3,684,740

REGENERATION OF PLATINUM GROUP METAL-ALPHA ALUMINA CATALYST

Robert N. Cimbalo, Homewood, and Allen R. Broyles, Midlothian, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed June 10, 1969, Ser. No. 832,010
Int. Cl. B01j *11/18, 11/04*
U.S. Cl. 252—416 11 Claims

A new method for regenerating a hydrogenation or dehydrogenation catalyst of a platinum-group metal on alpha-alumina is disclosed. The reactor containing the catalyst is first heated with an oxidizing gas to burn off deposited carbonaceous material. After the burning, the catalyst is cooled and washed with liquid phase water for a time sufficient to remove impurities. This burn and water-wash regeneration procedure can restore the catalyst activity and selectivity to substantially virgin levels.

3,684,741

SUPPORTED CATALYSTS CONTAINING VANADIUM PENTOXIDE AND TITANIUM DIOXIDE AND THEIR USE FOR THE PRODUCTION OF CARBOXYLIC ACIDS AND CARBOXYLIC ANHYDRIDES

Wilhelm Friedrichsen, Ludwigshafen, and Otto Goehre, Wilhelmsfeld, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,521
Claims priority, application Germany, Aug. 20, 1968, P 17 69 998.8
The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed
Int. Cl. B01j *11/82*
U.S. Cl. 252—435 8 Claims

Supported catalysts for the oxidation of aromatic or unsaturated aliphatic hydrocarbons to carboxylic acids or anhydrides, consisting of an inert nonporous carrier and an active composition of 1 to 40 parts by weight of vanadium pentoxide and 60 to 90 parts by weight of titanium dioxide and also 0.01 to 10% by weight (with reference to the amount of vanadium pentoxide) of a phosphorus compound, the vanadium pentoxide content of the whole supported catalyst being 0.05 to 3% by weight. The catalysts are used especially for the production of phthalic anhydride from o-xylene.

3,684,742

PROCESS FOR PREPARING A SILICA-ALUMINA SUPPORTED PLATINUM GROUP METAL HYDROCRACKING CATALYST

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,972
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R 4 Claims

A catalyst composition and method of manufacture. The catalyst composition comprises a platinum group metallic component on a silica-alumina carrier material. The catalyst is prepared to comprise a platinum group metallic component dispersed on the carrier material in a crystallite size of less than about 20 angstroms.

3,684,743

COMBUSTION CHAMBER COATINGS OF DIESEL ENGINES WITH VOLUMETRIC-FILM OR FILM MIXING

Nikolai Stepanovich Morotsky, ulitsa Kommuny 88, kv. 51; Natalia Lvovna Emelianenko, ulitsa Turistov 106, kv. 39; and Ramil Iskandarovich Shagabutdinov, Prospekt Lenina 20, kv. 76, all of Chelyabinsk, U.S.S.R.

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,820
Int. Cl. B01j *11/06*
U.S. Cl. 252—458 2 Claims

The invention relates to the combustion chamber coatings of the internal combustion piston engines.

According to the invention, the coating of the diesel combustion chamber is characterized in that an adhesion molybdenum backing applied to the combustion chamber by plasmic spraying is coated with a catalytic aluminosilicate layer consisting of 60–90% silicon oxide and 40–10% aluminum oxide which speeds up the decomposition of the source molecules of fuel within the preflame period

and reduces the quantity of unsaturated compounds in the liquid products of exhaust.

This coating is intended mainly for use in the diesels with volumetric-film or film mixing.

3,684,744

GRANULAR ALKALI METAL NITRILOTRIACETATE AND PROCESSES FOR PRODUCING SAME

Chung Yu Shen, St. Louis, Mo., and Norman Earl Stahlheber, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Mar. 4, 1968, Ser. No. 709,875. Divided and this application July 13, 1970, Ser. No. 61,034

Int. Cl. C02b *5/06*; **C11d** *3/30, 7/32*
U.S. Cl. 252—546 **4 Claims**

Caking-resistant granular alkali metal nitrilotriacetate products are prepared by forming a reaction mixture of nitrilotriacetic acid and alkali metal carbonate and water; the molar ratio of nitrilotriacetic acid to the alkali metal content of said carbonate being from about 1:2 to about 1:20, said water comprising from about 5% to about 35% by weight based upon the weight of the total reaction medium and drying the resulting mixture to obtain a detergent additive containing dialkyli metal nitrilotriacetate and having a bulk density of from about 0.4 to about 0.8 g./cc. and having about 60% of its particles smaller than the openings in a U.S. Standard 10 mesh screen and about 60% larger than the openings in a U.S. Standard 60 mesh screen and less than about 8% by weight of water.

3,684,745

SPECIAL ELECTRODES FOR LIGHT ARC FURNACES

Bernhard Reichelt, Nuremberg-Laufamholz, Wolfgang Lippert, Schwabach, Dieter Zollner, Erlangen, and Kurt Kegel, Essen-Steele, Germany, assignors to C. Conradty, Nuremberg, Germany

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,236

Claims priority, application Germany, Jan. 31, 1969, P 19 04 672.1

Int. Cl. H01b *1/06*
U.S. Cl. 252—507 **1 Claim**

A carbon or graphite electrode which contains of from 0.5 to 6% by weight of a titanium compound and method of making such electrode. According to a preferred method TiO_2 or a titanium metal is admixed to the starting material for the electrode, and the mixture is graphitized at a temperature of approximately 2600° C.

3,684,746

COMPOSITION FOR ELECTROSENSITIVE RECORDING PAPER

Kiyoshi Juna and Masuo Tsuchiya, Hiratsuka-shi, Japan, assignors to Kansai Paint Company, Limited, Amagasaki-shi, Japan

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,853

Claims priority, application Japan, Mar. 19, 1970, 45/22,704

Int. Cl. H01b *1/00*
U.S. Cl. 252—507 **8 Claims**

Compositions for electrosensitive recording paper are prepared from an epoxy resin, a semiconductive titanium compound doped with a donor impurity, and, if necessary, the metallic soaps of fatty acid.

3,684,747

METHOD FOR INCREASING THE LIQUID ABSORPTIVE CAPACITY OF LINEAR FLUOROCARBON SULFONIC ACID POLYMER

Richard Leslie Coalson, Wilmington, Del., and Walther Gustav Grot, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,999

Int. Cl. C08f *47/08, 15/00, 29/16*
U.S. Cl. 260—2.5 R **12 Claims**

The liquid absorptive capacity of linear fluorocarbon sulfonic acid polymer is increased by contacting the polymer with a liquid swelling agent such as ethylene glycol at a temperature of at least 110° C. The resultant polymer has increased pore volume, enabling it to have an increased take-up capacity for liquids such as aqueous electrolytes which increases the electrical conductivity of the polymer making it especially useful for ion-exchange membranes in electrochemical cells. The resultant swollen polymer is thermally stable in the sense that after drying at 100° C., it retains a substantial proportion of its improved liquid absorptive capacity.

3,684,748

FLAME-RETARDANT POLYURETHANE COMPOSITIONS COMPRISING A PHOSPHORUS-CONTAINING POLYOL AND AN AROMATIC CARBOXYLIC ACID ANHYDRIDE

Walter P. Barie, Jr., Shaler Township, Allegheny County, Norman W. Franke, Penn Hills Township, Allegheny County, and Gary M. Singerman, Monroeville, Borough, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 19, 1970, Ser. No. 38,877

Int. Cl. C08g *22/08, 22/44*
U.S. Cl. 260—2.5 AJ **7 Claims**

Flame-retarded polyurethane materials and foams containing a flame-retarding amount of a synergistic combination of a phosphorus-containing polyol having from two to about eight hydroxyl groups and a carboxylic acid anhydride having at least two groups including the anhydro group which are reactive with an isocyanate group.

3,684,749

ADHESIVE COMPOSITION FOR GUMMED TAPE

Haruhiko Arai, Narashino-shi, and Shoji Horin, Ichikawa-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,889

Claims priority, application Japan, Oct. 30, 1968, 43/79,124

Int. Cl. C08f *45/14, 45/24*
U.S. Cl. 260—8 **3 Claims**

An adhesive composition composed of (a) 10–90 parts by weight of a water-insoluble copolymer of vinyl acetate and lower alkyl (C1 to C4) acrylate copolymerized at a mol ratio in the range of 90:10 to 10:90 and having a degree of polymerization of between 100 and 3,000, (b) 90–10 parts by weight of a resinate-type surface active agent, and (c) dextrin, gelatine or glue. The component (c) is mixed with components (a) and (b) such that the weight ratio of component (c) to the sum of components (a) plus (b) is between 1:99 and 80:20. The adhesive composition is preferably applied in the form of an aqueous solution having a solids content of from 3 to 30% by weight.

3,684,750

Patent Not Issued For This Number

3,684,751

Patent Not Issued For This Number

3,684,752

UNDERWATER ANTI-FOULING COATING COMPOSITION

Masahiro Goto, Nishinomiya-shi; Tetsuo Noto, Takarazuka-shi; Mitsuya Kato, Amagasaki-shi; Morio Kimura, and Tadashi Watanabe, both of Hiratsuka-shi, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki-shi, Japan

Filed Dec. 9, 1969, Ser. No. 883,611

Claims priority, application Japan, Dec. 13, 1968, 43/90874; Feb. 3, 1969, 44/7359

Int. Cl. C09d *3/38, 3/64, 5/14*

U.S. Cl. 260—22 R 2 Claims

Underwater anti-fouling coating composition which contains a high molecular organic tin compound as an anti-fouling component and also as a film forming component, in which said high molecular organic tim compound is prepared by reacting an alkyd resin having free carboxyl groups and having a resin acid value of larger than 20 with organic tin oxide in an amount less than equivalent to said free carboxyl groups of said alkyd resin, thereby obtaining an underwater anti-fouling coating composition with superior anti-fouling effect and neither unpleasant odor nor irritating property, and further with good adhesiveness to the articles to be coated.

3,684,753

FLAME-RESISTANT POLYURETHANE COMPOSITIONS

Norman W. Franke, Penn Hills Twsp., Allegheny County, and Gary M. Singerman, Borough of Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 22, 1971, Ser. No. 117,749

Int. Cl. C08g *22/18, 22/44*

U.S. Cl. 260—2.5 AT 5 Claims

Novel polyurethane foams possessing improved resistance to burning and flame propagation are prepared by employing 2,5-tolylene diisocyanate or its ring-substituted chloro- or bromo- derivatives as a portion of the isocyanate component used in preparing the polyurethane foams.

3,684,754

FLAME-RETARDED POLYURETHANE COMPOSITIONS COMPRISING A PHOSPHORUS-CONTAINING POLYOL AND AN AROMATIC CARBOXYLIC ACID

Walter P. Barie, Jr., Shaler Township; Norman W. Franke, Penn Hills Township, and Gary M. Singerman, Borough of Monroeville, Allegheny County, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 19, 1970, Ser. No. 38,876

Int. Cl. C08g *22/08, 22/44*

U.S. Cl. 260—2.5 AJ 5 Claims

Flame-retarded polyurethane materials and foams containing a flame-retarding amount of a synergistic combination of a phosphorus-containing polyol having from two to about eight hydroxyl groups and an aromatic carboxylic acid having at least two carboxyl groups attached to one or more benzene nuclei.

3,684,755

COATING COMPOSITION OF FLUOROCARBON POLYMERIC MATERIAL AND INSULATED ELECTRICAL CONDUCTORS COATED THEREWITH

Carl Gumerman, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1970, Ser. No. 37,926

Int. Cl. C08f *29/16*

U.S. Cl. 260—17 R 5 Claims

A coating composition is provided which is composed of between about 77 percent and about 92 percent by weight of a copolymer of tetrafluoroethylene and hexafluoropropylene (FEP) or a blend of FEP and polytetrafluoroethylene (PTFE), between about 5 percent and about 15 percent by weight of finely divided silica, and between about 3 percent and about 8 percent by weight of methyl cellulose.

3,684,756

MOLD RELEASE COMPOSITIONS FROM MIXTURES OF SILICONE RESINS AND SILOXANE FLUIDS

Howard Larry Brooks, Sylvania, Ohio, assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 606,564, Jan. 3, 1967, abandoned. This application July 7, 1970, Ser. No. 52,988

Int. Cl. C08g *47/10, 51/28, 51/30*

U.S. Cl. 260—29.1 SI 8 Claims

A mold release composition at least 70 percent of an alkyl terminated organopolysiloxane fluid and at least 2 percent of a partially alkoxylated silicone resin having a hydrolysis level of from 40 to 70 percent and at least 4 percent based on the weight of the resin of a curing agent.

3,684,757

Patent Not Issued For This Number

3,684,758

PROCESS FOR THE PRODUCTION OF MODIFIED CATIONIC EMULSION POLYMERS WITH CATIONIC POLYURETHANE

Hans Ludwig Honig, Leverkusen; Carlhans Suling, Odenthal-Hahnenberg; Dieter Dieterich, and Artur Reischl, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 21, 1970, Ser. No. 82,795

Claims priority, application Germany, Oct. 23, 1969, P 19 53 345.0

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR 8 Claims

A process is provided for the production of stable aqueous polymer dispersions by subjecting vinyl monomers to radical emulsion polymerization in the presence of a stable aqueous dispersion of a high molecular weight cationic polyurethane which is gel-like in character.

3,684,759

PROCESS FOR THE PREPARATION OF MODIFIED EMULSION POLYMERS WITH OLIGOURETHANE SALT

Helmut Reiff, Cologne-Flittard; Dieter Dieterich, and Frank Wingler, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 21, 1970, Ser. No. 82,796

Claims priority, application Germany, Oct. 23, 1969, P 19 53 349.4

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR 17 Claims

A process is provided for the preparation of aqueous dispersions of polymers of olefinically unsaturated monomers in the

presence of emulsifiers capable of forming free radicals which emulsifiers contain urethane groups, characterized in that

5 to 95 percent by weight of at least one polymerizable olefinically unsaturated monomer is polymerized in the presence of

5 to 95 percent by weight of one or more oligourethane salts having an average molecular weight of 1,500 to 20,000 (preferably 2,000 to 10,000) and a tensile strength of less than 20 kg wt/cm², which salts have been prepared from water-insoluble oligohydroxy compounds having a molecular weight of 400 to 5,000.

3,684,760

MOLDING COMPOSITIONS OF POLYBUTENE-1

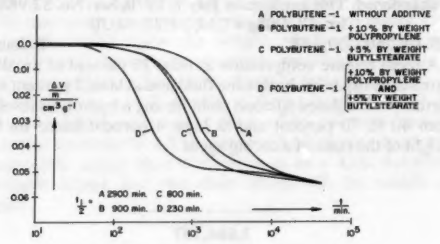
Gunther Goldbach, and Heinz-Hermann Meyer, Marl, both of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed July 27, 1970, Ser. No. 58,582

Claims priority, application Germany, July 31, 1969, P 19 38 913.0

Int. Cl. C08f *45/36, 45/52, 45/28*

U.S. Cl. 260—31.2 R **10 Claims**



The conversion of polybutene-1 from modification II to modification I is accelerated by the incorporation therein of a mixture of a solid polypropylene and a low molecular weight compound, e.g., oil, wax, an oily or semi-liquid polyolefin, a higher aliphatic carboxylic acid or salt or ester thereof, an ester of an aromatic carboxylic acid, an ester of an inorganic acid or a chlorinated paraffin.

3,684,761

ANIONIC DISPERSION POLYMERIZATION OF STYRENE MONOMERS

Guido B. Stampa, Watchung, N.J., assignor to Union Carbide Corporation

Filed Aug. 30, 1968, Ser. No. 756,372

Int. Cl. C08f *7/04, 45/34*

U.S. Cl. 260—33.2 R **2 Claims**

High molecular weight polymers are produced by the anionic dispersion polymerization of styrene monomers, particularly α-methylstyrene. The polymerization is carried out at a temperature below the ceiling temperature of the resulting polymer and in the presence of a diluent and a dispersing agent such as poly(vinyl alkyl ether). The diluents employed are those in which the monomer is soluble but in which the polymer is essentially insoluble.

The polymerization of these monomers by the anionic dispersion technique also results in the formation of a unique dispersion of the "living polymer."

3,684,762

Patent Not Issued For This Number

3,684,763

ACTIVATED CARBON BLACK PRODUCT

Arthur E. Frazier, Phillips, Tex., assignor to Phillips Petroleum Company

Filed Jan. 22, 1971, Ser. No. 108,977

Int. Cl. C08g *51/08*

U.S. Cl. 260—37 R **11 Claims**

Carbon black is pelleted in the presence of an arylene sulfide polymer followed by heating preferably with air and/or steam to produce a high strength substitute activated carbon. The arylene sulfide polymer ordinarily will be present in amounts ranging from 1 to 20 weight percent of the pelleted carbon black.

3,684,764

BRIGHTENING POLYVINYL CHLORIDE AND POLYOLEFIN PLASTICS WITH 2-NAPHTHYLNAPHTHOXAZOLES

Bennett George Buell, 311 Mountain Ave., Apt. C8, Bound Brook, N.J.

Filed April 13, 1970, Ser. No. 28,147

Int. Cl. C08f *45/67*

U.S. Cl. 260—45.8 NZ **3 Claims**

Polyvinyl chloride and polyolefin plastics such as polyethylene are brightened by incorporating uniformly therein about 0.01 to 0.5 percent by weight of a 2-naphthylnaphthoxazole or a dichloro-2-naphthylnaphthoxazole.

3,684,765

STABILIZATION OF SYNTHETIC POLYMERS

Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta; Ichiro Watanabe; Keisuke Murayama, and Syoji Morimura, all of Tokyo, Japan, assignors to Sankyo Company Limited

Filed Aug. 6, 1970, Ser. No. 61,861

Claims priority, application Japan, Jan. 8, 1970, 45/2619

Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.8 N **6 Claims**

A synthetic polymer composition is disclosed which is stabilized against photo- and thermal deterioration by incorporating in the composition an effective amount of a 4-aminopiperidine derivative.

3,684,766

PROCESS FOR ENHANCING THE INHERENT VISCOSITY OF BISPHENOL POLYESTERS

Winston J. Jackson, Jr.; Herbert F. Kuhfuss, and John R. Caldwell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 817,137, April 17, 1969, abandoned. This application Feb. 16, 1970, Ser. No. 11,902

Int. Cl. C03g *17/08*

U.S. Cl. 260—47 C **4 Claims**

A bisphenol polyester with an inherent viscosity of at least about 0.5 is produced by the steps of (1) preparing a bisphenol polyester with an inherent viscosity of at least about 0.1, (2) comminuting the prepared polyester (3) contacting the comminuted polyester with a crystallizing agent, and (4) heating the crystallized polyester in the presence of an inert gas to increase the inherent viscosity to at least 0.5. Preferably a copolyester of bisphenol A, terephthalic and isophthalic acid is used and the heating step is accomplished by fluidizing the crystallized polymer in the same vessel as used for crystallization.

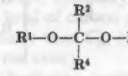
3,684,767

METHOD FOR PREPARING POLYOXYMETHYLENE

Akihiko Ito; Masaru Yoshida; Yoshiaki Nakase, all of Takasaki-shi; Tadashi Iwai, Miura-gun, Kanagawa-ken; Koichiro Hayashi, Osaka-fu, and Seizo Okamura, Kyoto-shi, all of Japan, assignors to Japan Atomic Energy Research Institute

Filed Jan. 6, 1970, Ser. No. 1,051
Claims priority, application Japan, Jan. 16, 1969, 44/3097
Int. Cl. C08g *1/00*
U.S. Cl. 260—67 FP 7 Claims

Tetraoxane is polymerized in the presence of alkyl acetal, represented by the general formula:



(wherein R^1 and R^3 are each an aliphatic hydrocarbon residue, having one to four carbon atoms; and R^2 and R^4 are each hydrogen or an aliphatic hydrocarbon residue, having one to three carbon atoms) to form polyoxymethylene. The polyoxymethylene so made has superior thermal stability and excellent strength and is obtained at a high yield in one step.

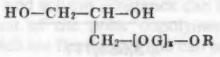
3,684,768

THERMALLY STABLE POLYESTERS HAVING IMPROVED DYEABILITY

Henry L. King, 919 Washington St.; Eugene L. Ringwald, 1021 Warren Ave., both of Cary, N.C., and James C. Randall, 1307 Hampden Square, Bartlesville, Okla.

Filed July 17, 1970, Ser. No. 55,872
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 R 6 Claims

Thermally stable polyesters having improved dyeability with disperse dyes are produced from dicarboxylic acids or reactive derivatives thereof, polymethylene glycols and small amounts of a dihydroxypropoxypoly(alkyleneoxy) alkane of the formula



where R is an alkyl group containing an average of from about eight to 20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above, and *x* has an average value of eight to 20 and is about equal to or greater than R.

3,684,769

THERMALLY REVERSIBLE POLYESTER POLYURETHANES

Norman Basil Abbott, and Charles Brian Chapman, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 4, 1970, Ser. No. 34,628
Claims priority, application Great Britain, May 15, 1969, 24,774/69
Int. Cl. C08g *22/12, 22/16*
U.S. Cl. 260—75 NK 12 Claims

A polyester- or polyether- urethane segmented polymer of substantially homogeneous structure, comprising polyester or polyether segments with reversibly thermolabile urethane cross-links between neighboring polymer chains, and processes for producing such polymers.

3,684,770

SEGMENTED POLYURETHANE ELASTOMERS BASED ON POLYETHER AND POLYESTER DIOLS

Ernst Meisert, Leverkusen; Albert Awater, Cologne-Muelheim; Cornelius Muhlhausen, Leverkusen, and Uwe Jens Dobereiner, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1970, Ser. No. 59,666
Claims priority, application Germany, May 7, 1969, P 19 40 181.1
Int. Cl. C08g *22/10, 22/14, 22/16*
U.S. Cl. 260—75 NP 6 Claims

Polyurethane elastomers are prepared by reacting a prepolymer (A) of a polyether diol and a diisocyanate with a mixture (B) of a polyester diol and a lower molecular weight glycol at a temperature of from about 60°C. to about 180°C. The reaction product of (A) and (B) is resistant to separation and the polyurethane elastomers combine all of the advantageous properties of both polyether polyurethanes and polyester polyurethanes and are useful as foils and coatings and can be molded into a variety of elastomeric products.

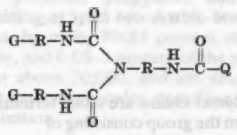
3,684,771

POLYESTERS WITH SUBSTITUTED AMINE END GROUPS

Robert A. Braun, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 776,823, Nov. 18, 1968, abandoned. This application March 3, 1971, Ser. No. 120,769
Int. Cl. C08g *39/10, 17/14*
U.S. Cl. 260—77 3 Claims

Polyesters represented by the general structure



useful as film-formers in coating compositions wherein G may be isocyanate, amino, carbamate, or urea groups, and Q is a dicarboxylic acid - diol or polylactone polyester chain.

3,684,772

Patent Not Issued For This Number

3,684,773

SYNTHESIS OF CYANOFORMAMIDYL ISOCYANATES AND POLYIMINOIMIDAZOLIDINEDIONES THEREFROM

Tad L. Patton, 5010 Glen Haven Drive, Baytown, Tex.

Continuation-in-part of Ser. No. 685,281, Nov. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 685,311, Nov. 24, 1967, abandoned. This application Sept. 29, 1970, Ser. No. 76,590
Int. Cl. C08g *22/02*
U.S. Cl. 260—77.5 CH 8 Claims

The monoadduct of a diisocyanate and hydrogen cyanide, a cyanoformamidyl isocyanate, is produced by the reaction of one mole of a diisocyanate with one mole of hydrogen cyanide. Heterocyclic polymers are produced by the head-to-tail polymerization of cyanoformamidyl isocyanates in an appropriate solvent and in the presence of an effective catalyst.

3,684,774
HYDANTOINS AND POLYHYDANTOINS CONTAINING CARBOXYLIC ACID FUNCTIONS

Rudolf Merten, Leverkusen, and Gerhard Dieter Wolf, Dormagen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1970, Ser. No. 6,581

Claims priority, application Germany, Feb. 10, 1969, P 19 06 492.7

Int. Cl. C08g *41/00*

U.S. Cl. 260—77.5 C **1 Claim**

Hydantoin oligomers and polymers are produced by reacting polyglycine esters with an isocyanate of the formula OCN — R''' — $(CO - Z)_n$, wherein R''' is a hydrocarbon radical, Z is an alkoxy or aroxy radical and *n* is an integer from 1 to 4. In this reaction di- or polyisocyanates may be used additionally.

3,684,775
CHAIN TERMINATED POLYHEXAMETHYLENE ADIPAMIDE

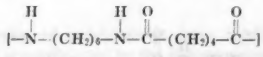
Richard N. Blomberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 15, 1970, Ser. No. 54,930

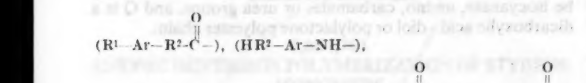
Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **4 Claims**

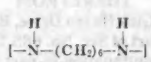
Filaments, having high tenacity, high initial modulus and low elongation-at-break, of poly(hexamethylene adipamide) having the recurring structural unit



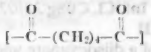
wherein the polymer chains are chain terminated with a radical selected from the group consisting of



wherein Ar, R^1 and R^2 have the significance hereinafter defined, said radical comprising between about 0.35 and 2.0 mol percent of the total mols of iminohexamethyleneimino units



adipoyl units



and radicals present in the polymer, said poly(hexamethylene adipamide) having a relative viscosity between about 15 and 35, measured as hereinafter described, are prepared.

3,684,776
NOVEL INTERPOLYMERS USEFUL AS THICKENING AGENTS

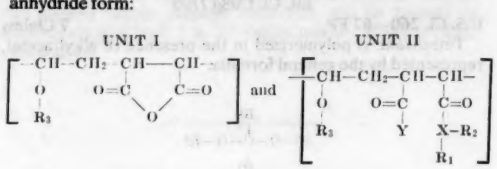
Nathan D. Field, 2736 Liberty St., Allentown, Pa., and Earl P. Williams, 803 Applegate Ave., Pen Argyl, Pa.

Filed March 20, 1970, Ser. No. 21,476

Int. Cl. C08f *27/12*

U.S. Cl. 260—78.5 T **5 Claims**

Interpolymers consisting essentially of the structural units in anhydride form:



wherein

X represents

Y represents —OH, —OR_1,

and when Y and R_2 are taken together represent a single bond of an imide ring; R_1 and R_2 represent hydrogen or the same or different hydrocarbon radicals having from one to 50 carbon atoms and together contain a total of from six to 50 carbon atoms selected from the group consisting of normal chain alkyl, branched chain alkyl, cycloalkyl, and alkylaryl radicals; (where X = —O—, R_2 does not exist); R_3 represents the same or different hydrocarbon radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, and $-CH_2CH_2O)_q(CH_2)_mCH_3$ radicals wherein $_q$ represents an integer of from about 1 to about 3 and $_m$ represents an integer of from about 0 to about 3.

3,684,777
NOVEL INTERPOLYMERS USEFUL AS THICKENING AGENTS

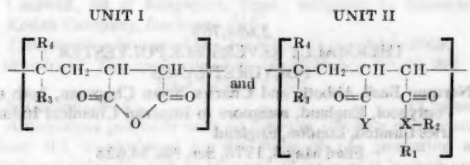
Nathan D. Field, 2736 Liberty St., Allentown, Pa., and Earl P. Williams, 803 Applegate Ave., Pen Argyl, Pa.

Filed March 20, 1970, Ser. No. 21,486

Int. Cl. C08f *27/12*

U.S. Cl. 260—78.5 T **7 Claims**

An interpolymer composition comprising:



Wherein

Y represents —OH and O—R_1 and

Y and R_2 together represent a single bond of an imide ring.
X represents either

or —O—.

R_1 represents the same or different hydrocarbon radicals containing from about C_6 to about C_{36} carbon atoms selected from the group consisting of normal chain alkyl, branched chain alkyl, cycloalkyl and alkylaryl radicals.

R_2 represents H or the same or different hydrocarbon radicals containing from about C_1 to about C_{30} carbon atoms selected from the group consisting of normal chain alkyl, branched chain alkyl, cycloalkyl, and alkylaryl radicals wherein the sum total of carbon atoms represented by R_1 and R_2 is not greater than C_{36} (when X=O, or an imide nitrogen, R_2 does not exist).

R_3 represents either hydrogen, methyl, ethyl or phenyl.

R_4 represents either hydrogen or methyl, which compounds are particularly useful as thickening agents for solutions of high ionic strength.

3,684,778

POLYMERS OF ETHYLENE, SULFUR DIOXIDE AND ETHYLENIC MONOMERS

Clarence Frederick Hammer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 28, 1970, Ser. No. 32,740
Int. Cl. C08f *13/06, 29/00*
U.S. Cl. 260—79.3 A **16 Claims**

Essentially random copolymers of ethylene, sulfur dioxide and at least one copolymerizable ethylenically unsaturated organic compound such as vinyl acetate or methyl methacrylate which are essentially free of 1:1 molar ratio of ethylene and sulfur dioxide are provided. Processes for preparing these copolymers are also provided. These copolymers consist essentially of at least about 25 percent by weight ethylene, from about 0.1 to 30 percent by weight of sulfur dioxide and from about 0.1 to 55 percent by weight of at least one of the copolymerizable organic compounds. By varying the amount of the highly polar sulfur dioxide in the copolymer, materials which are blendable with another solid organic polymer such as a vinyl chloride polymer and which possess improved properties such as oil and solvent resistance can be obtained. By varying the amount of the polar copolymer in the blend, shaped articles which are flexible or rigid can be obtained.

3,684,779

MALEIC/ACRYLIC/ALKENYL PHOSPHONATE TERPOLYMERS

John N. Rapko, 5905 Lojara Drive, St. Louis, Mo.

Filed April 7, 1971, Ser. No. 132,233
Int. Cl. C08f *15/40*
U.S. Cl. 260—78.5 R **5 Claims**

Maleic/acrylic/alkenyl phosphonate terpolymers are useful as sequestrants and for inhibition of deposition of metal ion precipitates from aqueous solutions.

3,684,780

POLYMERIZATION PROCESS USING MULTIFUNCTIONAL POLYMERIZATION IMITATORS

Floyd E. Naylor, c/o Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 795,365, Jan. 30, 1969, Pat. No. 3,640,899. This application April 2, 1971, Ser. No. 130,828
Int. Cl. C08d *1/32*; **C08f** *19/08, 1/28*
U.S. Cl. 260—83.7 **10 Claims**

Sec- or tert-organomonolithium compounds are reacted with 1,3-butadiene in the absence of added polar material to produce a multifunctional polymerization initiator effective for the polymerization of such as isoprene to a high cis polyisoprene, or polymerization of such as styrene and butadiene to block copolymers which exhibit high green tensile strengths.

3,684,781

ADJUSTING THE VISCOSITY OF POLYALKENAMERS

Karl Nutzel, Opladen; Friedrich Haas, Koeln 80, and Gunter Marwede, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 6, 1970, Ser. No. 26,154
Claims priority, application Germany, April 15, 1969, P 19 19 047.7
Int. Cl. C08f *17/00, 15/02, 3/02*
U.S. Cl. 260—80.78 **5 Claims**

The molecular weight of cycloolefin polymers is adjusted by effecting the catalytic polymerization of cycloolefins in organic solvents in the presence of from 0.001 to 1 percent of an 1-olefin.

3,684,782

MANUFACTURED SHAPED ARTICLES OF UNSATURATED OLEFINIC COPOLYMERS

Paolo Longi; Alberto Valvassori, both of 7 Via Mangingalli; Francesco Greco, 18 Via Todino, all of Milan, and Ermanno Bernasconi, 31 Via Montello, Caronno Varesino, all of Italy

Filed Sept. 11, 1968, Ser. No. 759,197
Claims priority, application Italy, Sept. 13, 1967, 20358 A/67
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 **10 Claims**

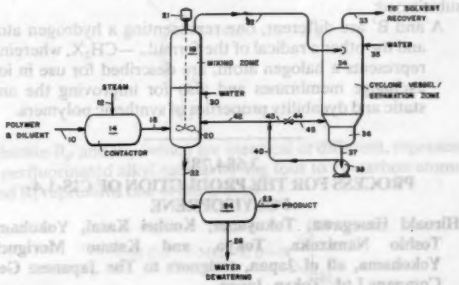
The invention provides manufactured shaped articles, more particularly elastic films and fibers, having excellent characteristics. The articles are transformation products of certain terpolymers of ethylene, propylene, and hydrocarbon monomers containing at least two double bonds, which terpolymers contain, by mols, 70–85 percent ethylene, 15–30 percent propylene, and 0.05–3 percent of the polyene, have a molecular weight above 20,000, and are amorphous in the relaxed state but crystallize under stretching, more particularly after vulcanization.

3,684,783

DILUENT RECOVERY PROCESS

John D. Lauck, 111 Crestwood Drive, Parkersburg, W. Va.

Filed Nov. 5, 1970, Ser. No. 87,046
Int. Cl. C08f *1/88*; **C08d** *5/00*
U.S. Cl. 260—85.1 **4 Claims**



An improved process for separating a volatile organic diluent from a low density olefin polymer in solution of suspension comprises vaporizing the diluent with steam and water at an elevated temperature and separating a slurry of

polymer and water; discharging a vapor stream containing a small amount of polymer particles into a cyclone vessel; withdrawing the vapors substantially free of polymer and recovering the diluent; and removing the separated particles from the cyclone with a flow of water at a downward velocity exceeding the rise velocity of the particles through the water to prevent agglomeration of the particles.

3,684,784

QUATERNARY NITROGEN-CONTAINING RANDOM COPOLYMERS

Xavier Marze, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

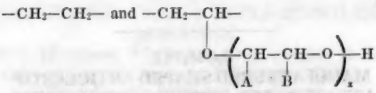
Filed Oct. 9, 1970, Ser. No. 79,696

Claims priority, application France, Oct. 15, 1969, 6935303

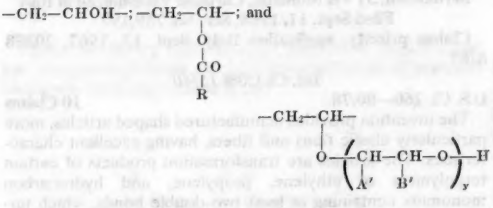
Int. Cl. C08f *15/02, 15/40, 27/08*

U.S. Cl. 260—80.3 N **7 Claims**

New compositions of matter which are nitrogen-containing random copolymers which comprise recurring units of formulas

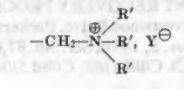


alone, or in combination with one or more of the recurring units of formulas:



the relative proportions of the recurring units in the copolymers being, respectively, *n* and *q* and if present, *m*, *p* and *r*, such that the ratio *n*:*m*+*p*+*q*+*r* is between 1 and 60, in which R represents hydrogen or aliphatic, alicyclic, aromatic or araliphatic radical;

A and B are different, one representing a hydrogen atom and the other a radical of the formula:



wherein $Y^{\ominus}$ is an anion, and each R′, which may be the same or different, represents a hydrocarbon radical, which may be substituted;

A′ and B′ are different, one representing a hydrogen atom and the other a radical of the formula $-CH_2X$, wherein X represents a halogen atom, are described for use in ion-exchange membranes and also for improving the antistatic and dyeability properties of synthetic polymers.

3,684,785

PROCESS FOR THE PRODUCTION OF CIS-1,4-POLYISOPRENE

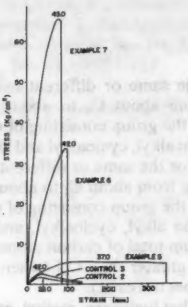
Hiroaki Hasegawa, Tokuyama; Kouhei Kasai, Yokohama; Toshio Namizuka, Tokyo, and Katsuo Moriguchi, Yokohama, all of Japan, assignors to The Japanese Geon Company Ltd., Tokyo, Japan

Filed Sept. 15, 1970, Ser. No. 72,367

Int. Cl. C08d *1/14, 1/36, 3/10*

U.S. Cl. 260—85.3 **6 Claims**

In the process for producing cis-1,4-polyisoprene by polymerizing isoprene using a catalyst consisting essentially of an organoaluminum compound and a titanium tetrahalide, the improved process which comprises effecting the polymeriza-



tion reaction in the presence in the polymerization system of ethylene in an amount not exceeding 8 parts by weight per 100 parts by weight of the isoprene.

3,684,786

PROCESS FOR PREPARING PERFLUORO-2-BUTYNE POLYMER

Swayambu Chandrasekaran, East Orange, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,623

Int. Cl. C08f *9/00*

U.S. Cl. 260—92.1 **4 Claims**

Solid homopolymer of perfluoro-2-butyne is prepared by polymerizing perfluoro-2-butyne using small amounts of trifluoromethyl hypofluorite as initiator.

3,684,787

PREPARATION OF POLYALKENAMERS

Karl Nutzel, Opladen; Friedrich Haas, Cologne, and Gunter Marwede, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 6, 1970, Ser. No. 26,185

Claims priority, application Germany, April 15, 1969, P 19 19 048.8

Int. Cl. C08f *1/28, 3/02, 15/04*

U.S. Cl. 260—93.1 **6 Claims**

Aromatic and aliphatic nitro compounds as cocatalysts to improve organometal mixed catalysts for polymerizing cycloalkenes under ring opening.

3,684,788

Patent Not Issued For This Number

3,684,789

PROCESS FOR PRODUCTION OF BUTADIENE POLYMER

Yoshiharu Yagi, Osaka; Akira Kobayashi, Nishinomiya, and Itsuro Hirata, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-fu, Japan

Filed April 10, 1970, Ser. No. 27,420

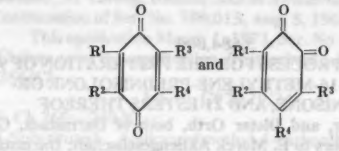
Claims priority, application Japan, April 10, 1969, 44/27917

Int. Cl. C08d *1/14, 3/06*

U.S. Cl. 260—94.3 **8 Claims**

Process for production of butadiene polymer containing predominantly cis-1,4 structure which comprises polymerizing butadiene in the presence of a catalyst system consisting essentially of (1) at least one of nickel and cobalt compounds,

(2) trialkyl aluminum and (3) at least one of the benzoquinone compounds represented by either one of the formulas:



wherein at least two of R^1, R^2, R^3 and R^4 are selected from halogen atoms of same or different kind of cyano groups and others are each hydrogen, halogen or cyano, or the combinations of R^1 with R^2 and/or of R^3 and with R^4 may represent an aromatic condensed ring(s) and the remaining ones are, if any, each hydrogen, halogen or cyano in a liquid medium at a temperature from −30° to 150°C.

3,684,790

METHOD OF SEPARATING PROTEINS FROM PROTEINACEOUS ANIMAL MATERIAL USING MUCILAGE OF FLAX, QUINCE OR FLEAWORT

Elma Paniaga De Carranza, Jr. Arica 242 Magdalena Nueva, Lima, Peru

Filed July 23, 1970, Ser. No. 58,650
Int. Cl. A23j *1/04*
U.S. Cl. 260—112 R **11 Claims**

Protein is precipitated in clots from proteinaceous animal material by subjecting the same to the action of the mucilage of flax, quince or fleawort seeds. The residual liquid mass contains amino acids, vitamins, hormones and salts which may be separated by conventional methods.

3,684,791

$N^{\alpha(A1)}$, $N^{\epsilon(B29)}$-DI-TERT. BUTYLOXYCARBONYL-INSULIN AND PROCESS FOR ITS MANUFACTURE

Rolf Geiger, Frankfurt am Main; Werner Pfaff, Hofheim/Taunus; Alfred Bander, Eppenhain/Taunus; Hans-Hermann Schone; Bad Soden/Taunus, and Adolf Mager, Niedernhausen/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Sept. 22, 1969, Ser. No. 859,688
Claims priority, application Germany, Sept. 28, 1968, P 17 93 517.0
Int. Cl. A61k *17/02*; **C07c** *103/52*
U.S. Cl. 260—112.7 **2 Claims**

$N^{(A1)}$, $N^{(B29)}$-di-tert. butyloxycarbonyl insulin, useful as a hypoglycemic agent. A method for its preparation by reacting insulin, in a mixture of an N,N′-dialkylcarboxylic acid amide having a total of from three to six carbon atoms and an aqueous buffer solution having a pH between 8.0 and 9.0, with a 20 to 75 fold molar excess of tert. butyloxycarbonyl azide at 20° to 50°C.

3,684,792

NEW WATER-INSOLUBLE AZO-COMPOUNDS CONTAINING A CARBOXAMIDO-CARBOSTYRIL GROUP

Willy Mueller, Fuerfelderstrasse 55, Riehen, Switzerland

Filed Sept. 3, 1959, Ser. No. 855,028
Claims priority, application Switzerland, Sept. 5, 1969, 13326/68
Int. Cl. C09b *29/20, 29/22*; **D06p** *3/00*
U.S. Cl. 260—155 **7 Claims**

Water insoluble azo dyestuff pigments of the formula

$$R_1 - N \quad N - R_2 - CONHR_3 \qquad (1)$$

in which R_1 represents an aromatic or heterocyclic residue, R_2 is a hydroxynaphthalene residue, in which the azo, hydroxyl and carboxylic acid amide groups are in the 1,2,3-positions, or R_2 represents the residue of an enolisable or enolised ketomethylene compound, and R_3 represents a carbostyril residue. They are useful for coloring laqueurs and plastic masses in yellow to red shades fast to light and migration.

3,684,793

ROOM TEMPERATURE CURING ORGANOPOLYSILOXANES

Anthony Enrico Pepe, Wilton, Conn.; Guenther Fritz Lengnick, Manitou Beach, and Charles George Neuroth, Blissfield, both of Mich., assignors to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 688,336, Dec. 6, 1967, abandoned. This application April 10, 1970, Ser. No. 27,454
Int. Cl. C08f *19/14*
U.S. Cl. 260—18 S **5 Claims**

The invention relates to curable organopolysiloxane compositions comprising an organopolysiloxane and a disilaorganic cross-linking agent containing functional groups which are hydrolyzable in the presence of ambient moisture.

3,684,794

3-O-(α-L-MYCAROSYL)-8-HYDROXY-ERYTHRONOLIDE B

Jerry Roy Martin, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 18, 1970, Ser. No. 99,705
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E **1 Claim**

3-O-(α-L-mycarosyl)-8-hydroxyerythronolide B is useful as an antipyretic agent. The compound is prepared by the fermentation of 8-hydroxyerythronolide B with *Streptomyces erythreus* NRRL 3887 in a suitable nutrient media.

3,684,795

Patent Not Issued For This Number

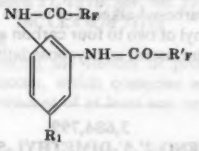
3,684,796

DERIVATIVES OF BIS-PERFLUOROALKANOYL-PHENYLENE-DIAMINES

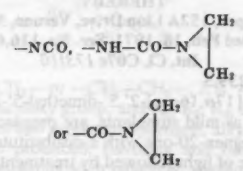
Otto Scherer, Bad Soden/Taunus, and Klaus-Dieter Muller, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 24, 1970, Ser. No. 13,752
Claims priority, application Germany, Feb. 25, 1969, P 19 09 273.0
Int. Cl. C07c *119/04*; **C07d** *23/06, 23/08*
U.S. Cl. 260—239 E **2 Claims**

Compounds of the general formula



wherein R_F and R'_F, which are identical or different, represent a perfluorinated alkyl radical having four to 12 carbon atoms, and R_1 represents one of the groups



and their use for oil-, water- and soil- repellent finishes.

3,684,797

PURIFICATION OF LAUROLACTAM

Johan W. Garritsen, Geleen, and Johannes E. L. Classens, Heerlen, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed July 8, 1970, Ser. No. 53,324

Claims priority, application Netherlands, July 8, 1969, 6910429

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 5 Claims

Laurolactam is purified by crystallization from solution in a solvent mixture of acetonitrile and water. The water content of the solvent mixture does not exceed 45 percent. Laurolactams thus purified are useful in the preparation of polyamides.

3,684,798

5-PHENYL-7-CHLORO-1H-1,5-BENZODIAZEPIN E-2,4-(3H,5H)-DIONES

Karl-Heinz Weber, Gau-Algesheim; Karl Zeile; Peter Danneberg, both of Ingelheim; Rolf Giesemann, Bingen, all of Germany; Karl Heinz Hauptmann, deceased, late of Ingelheim am Rhine, Germany, and by Maria Hauptmann, heir, Bonn am Rhine, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

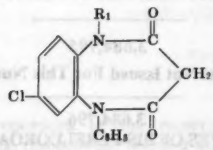
Continuation-in-part of Ser. No. 89,482, Nov. 13, 1970, which is a continuation-in-part of Ser. No. 703,188, Feb. 5, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,716

Claims priority, application Germany, Feb. 7, 1967, B 91071; Jan. 18, 1968, B 96281; Jan. 18, 1968, B 92682

Int. Cl. C07d *53/04*

U.S. Cl. 260—239.3 B 8 Claims

Compounds of the formula



wherein

R_1 is hydroxy-alkyl of two to four carbon atoms; haloalkyl of two to four carbon atoms; di(alkyl of two to four carbon atoms)amino-alkyl of two to four carbon atoms; γ-piperidino-propyl; alkoxy of one to two carbon atoms - alkyl of one to four carbon atoms; (alkoxy of one to two carbon atoms)carbonyl-alkyl of one to four carbon atoms; (alkyl of one to two carbon atoms) mercapto-alkyl of one to four carbon atoms; straight or branched alkenyl of three to five carbon atoms; (alkoxy of one to two carbon atoms)carbonyl-alkenyl of two to four carbon atoms; or halo-alkenyl of two to four carbon atoms;

the compounds are useful as psychosedatives and anticonvulsives.

3,684,799

ANDROSTENO-2′,5′-DIMETHYL-5′-ALKYL-1′-PYRROLINES, METHODS FOR THEIR MANUFACTURE, AND NOVEL 16ALPHA-(1′-AMINO-1′-ALKYL-ETHYL)-PREGNENE INTERMEDIATES PRODUCED THEREBY

Thomas L. Popper, 152A Linn Drive, Verona, N.J.

Filed Feb. 18, 1971, Ser. No. 116,663

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.5 18 Claims

Androsteno-[17α,16α-c]-2′,5′-dimethyl-5′-alkyl-1′-pyrrolines, active as mild stimulants, are prepared by reacting a 16-dehydropregnen-20-one with a disubstituted methylamine in the presence of light followed by treatment of the resulting 16α-(1′-amino-1′-alkylethyl)-pregnen-20-one (which per se exhibit pharmacological activity) with a secondary or tertiary amine in a lower alkanoic acid.

3,684,800

DI-EPOXIDE PROCESS FOR THE PREPARATION OF 9α-FLUORO-16-METHYLENE-PREDNISOLONE OR-PREDNISONE, AND 21-ESTERS THEREOF

Klaus Irmscher, and Dieter Orth, both of Darmstadt, Germany, assignors to E. Merck Aktiengesellschaft, Darmstadt, Germany

Filed Aug. 21, 1969, Ser. No. 847,578

Claims priority, application Germany, Aug. 31, 1968, P 17 93 318.5

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 1 Claim

In the preparation of 9α-fluoro-16-methylene-prednisolone or -prednisone and 21-esters thereof, 9β, 11β; 16α, 17α-diepoxy-16β-methylprogesterone is reacted, in any desired sequence, with hydrogen fluoride and with a microbiological 1(2)-dehydrogenation agent, to produce 9α-fluoro-16-methylene-1,4-pregnadiene-11β,17α-diol-3,20-dione. The resultant compound is then subjected to acetoxylation at the 21-position. Thereafter, 9α-fluoro-16-methyleneprednisolone-21-acetate is optionally converted to corresponding prednisone by treatment with an oxidizing agent, and/or the 21-acetoxy-group is saponified to form the corresponding 9α-fluoro-16-methyleneprednisolone or -prednisone, and/or the free 21-OH groups are esterified.

The 9β, 11β; 16α, 17α-diepoxy-16β-methylprogesterone starting material is prepared by subjecting 16β-methyl-16α,17α-epoxyprogesterone to the successive steps of 11-hydroxylation, dehydration, chemical addition of hypohalous acid and dehydrohalogenation, with special pH conditions maintained during the dehydration step to avoid epoxide cleavage.

3,684,801

REMOTE OXIDATION OF UNACTIVATED STEROID METHYLENE GROUPS

Ronald Breslow, 275 Broad Ave., Englewood, N.J.; Steven Baldwin, 542 W. 112th St., Apt. 6N, Steven, N.Y., and Michell Winnik, 1149 N. Chicago St., Los Angeles, Calif.

Filed May 18, 1970, Ser. No. 38,486

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.57 25 Claims

There is provided a method of activating inactive methylene groups of the 5α-steroid nucleus. This method comprises forming a 3α-m- or p-benzoylphenyl 5α-steroid alkanoate and irradiating said ester in ultraviolet light in the presence of a solvent. Upon saponification of the ester there is produced directly or after an oxidation step performed prior to saponification, a steroid corresponding to the starting steroid additionally possessing a reactive group located at position 12, 14 or 16 of the steroid nucleus, the location depending on the number of carbons in the original alkanoyl moiety.

3,684,802

NEW ANTHELMINTIC AGENTS

James W. McFarland, Lyme, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

Division of Ser. No. 675,285, Oct. 16, 1967, Continuation-in-part of Ser. No. 560,856, June 27, 1966, abandoned. This application April 24, 1970, Ser. No. 12,552

Int. Cl. C09b *23/10*

U.S. Cl. 260—240 E 1 Claim

New 1-(2-arylvinyl) and 1-(2-arylacyl)-pyridinium and α-picolinium salts and their use as anthelmintic agents.

3,684,803

1,4,4-SUBSTITUTED PIPERIDINE DERIVATIVES

Hans Herbert Kuhnis, 20 Engelgasse, Basel, and Ulrich Renner, 31 Talweg, Riehen, both of Switzerland

Continuation of Ser. No. 750,015, Aug. 5, 1968, abandoned. This application March 1, 1971, Ser. No. 119,857

Claims priority, application Switzerland, Aug. 11, 1967, 11356/67

Int. Cl. C07d *29/24*

U.S. Cl. 260—240 K 10 Claims

1-Substituted 4-alkanoylmethyl-4-carboalkoxy-piperidine derivatives and their pharmaceutically acceptable acid addition salts are prepared by various methods. These compounds have anti-tussive and analgesic activity and are the active ingredients of pharmaceutical compostions, which can be used for the treatment and amelioration of tussive irritation and pain of various origin. A typical embodiment is 1-(3-phenylpropyl)-4-acetonyl-isonipecotinic acid ethyl ester.

3,684,804

Patent Not Issued For This Number

3,684,805

2,3,4,4A-TETRAHYDRO-10H-1,2-OXAZINO [3,2-B](1,3)BENZOXAZIN-10-ONES

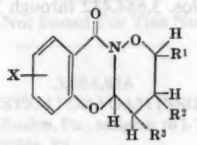
David B. Reisner, Hightstown; Bernard J. Ludwig, North Brunswick; Harold M. Bates, Nutley, and Frank M. Berger, Princeton, all of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed March 24, 1969, Ser. No. 809,930

Int. Cl. C07d *87/02*, *87/16*

U.S. Cl. 260—244 R 1 Claim

Chemical compounds of the formula:



wherein X is hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy, nitro, amino, acetamido, sulfonamido or trifluoromethyl, and each R is selected from the group consisting of hydrogen and lower alkyl. Said compounds have valuable anti-inflammatory activity in standard laboratory animals.

3,684,806

2(α-METHYL-α-HYDROXY)-ETHYL-4-MORPHOLINE-6-TRICHLOROMETHYL-5-TRIAZINE

Werner Heimberger, Hanau on Main, Germany, assignor to Geutsche Gold-Und Silber-Schudeamstalt vormals Roessler, Frankfurt on Main, Germany

Continuation-in-part of Ser. No. 884,708, Dec. 12, 1969, abandoned, which is a division of Ser. No. 594,647, Oct. 31, 1966, Pat. No. 3,522,255, and a continuation-in-part of Ser. No. 704,237, Feb. 9, 1968, Pat. No. 3,583,986, which is a continuation-in-part of Ser. No. 594,647, Oct. 31, 1966, Pat. No. 3,522,255. This application June 1, 1970, Ser. No. 42,488

Claims priority, application Germany, Oct. 30, 1965, D 48552

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 R 1 Claim

2(α-methyl-α-hydroxy)-ethyl-4-morpholino-6-trichloromethyl-s-triazine. The compound has analgesic and anti-inflammatory action.

3,684,807

METHOD OF PREPARING ISOCYANURATES

Perry A. Argabright, 900 Cottonwood Ave., Littleton, Colo., and Charles H. Depuy, 1509 Cascade Ave., Boulder, Colo.

Continuation-in-part of Ser. No. 682,542, Nov. 13, 1967, abandoned. This application May 18, 1970, Ser. No. 38,554

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS 10 Claims

A method of preparing isocyanurates, particularly unsymmetrically trisubstituted isocyanurates, comprising forming a reaction mixture of an organic isocyanate, an organic halide and an alkali or alkaline earth metal cyanate, and carrying out the reaction between the isocyanate, the halide and the metal cyanate in the presence of an aprotic dipolar solvent at a temperature in the range of from about 25°C to about 300°C. Pressures of the order of about 0.1 to 30 atmospheres and an inert atmosphere advantageously are employed in carrying out the reaction. The products may be used as intermediates in the production of pharmaceuticals, insecticides, disinfectants, and in the preparation of polymers.

3,684,808

ANTHRAQUINONYL TRIAZINE DYES

Paul Ulrich, Magnolienpark 10, Basel, Switzerland

Filed Jan. 27, 1970, Ser. No. 6,288

Claims priority, application Switzerland, Jan. 31, 1969, 1563/69

Int. Cl. C07d *55/20*

U.S. Cl. 260—249 9 Claims

The invention relates to compounds of the formula

$$(1) \qquad A_1 - B - R - B - A_2$$

wherein A_1 and A_2 each denotes a residue of a polycyclic auinone, of which one must be vattable, B denotes a five-membered or six-membered heterocyclic ring which contains at least one ring nitrogen atom, and R denotes the residue of a polyfunctional hydroxy or mercapto compound which is bound through two of its oxygen or sulphur atoms to a carbon atom of the residue B.

3,684,809

OXYCYCLIC PYRAZINES AND PROCESS FOR PREPARING SAME

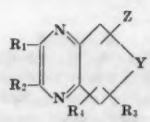
Braja D. Mookherjee, Matawan, N.J., and Muus G. J. Beets, Hilversum, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed April 17, 1970, Ser. No. 29,639

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 5 Claims

Processes for altering the flavors of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one oxycyclic pyrazine having the formula



wherein Y is $—CH_2—$ or $—CH_2—CH_2—$; Z is = O, a hydroxyl group, or an acyloxy group; and R_1, R_2, R_3, and R_4 are the same or different and represent hydrogen, alkyl, or alkylene; the products so produced; flavoring and flavor-enhancing compositions containing such oxycyclic pyrazines; and novel oxycyclic pyrazines and processes for their production.

3,684,810

PROCESS FOR 2,4-DIAMINO-5-(3,5-DIMETHOXY-4-HYDROXYBENZYL) PYRIMIDINE

Arnold Brossi, Verona, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 11, 1970, Ser. No. 18,747

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **3 Claims**

The preparation of 2,4-diamino-5-(3,5-dimethoxy-4-hydroxybenzyl)pyrimidine by treating 2,4-diamino-5-(3,4,5-trimethoxybenzyl)pyrimidine with a mineral acid is described.

3,684,811

PRODUCTION OF GAMMA-AMINOALKYLUREAS

Harro Petersen, Frankenthal/Pfalz, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Continuation of Ser. No. 748,231, July 29, 1968, abandoned. This application Nov. 4, 1970, Ser. No. 86,935

Int. Cl. C07d *51/18, 49/30*

U.S. Cl. 260—256.4 C **11 Claims**

Production of gamma-aminoalkylureas by reaction of β-ureidopropionaldehydes with ammonia or amines and hydrogen. The products are valuable intermediates for the production of diamines, polyamines, herbicides and fungicides.

3,684,812

BENZOHETEROCYCLICALKYL DERIVATIVES OF 2,4,9-TRIAZASPIRO(5,5)UNDECAN-1,3,5-TRIONE

Carl Kaiser, and Charles L. Zirkle, both of 1500 Spring Garden St., Philadelphia, Pa.

Division of Ser. No. 771,320, Oct. 28, 1968, Pat. No. 3,629,267. This application March 10, 1971, Ser. No. 123,089

Int. Cl. C07d *99/06*

U.S. Cl. 260—256.5 R **7 Claims**

Benzoheterocyclicalkyl derivatives of 2,4,9-triazaspiro[5,5] undecan-1,3,5-trione in which the benzoheterocyclic moiety is thianaphthemyl or benzofuranyl, optionally substituted by chloro, bromo, fluoro, methyl, methoxy or trifluoromethyl, have neuroleptic activity. The compounds are generally prepared from either the benzoheterocyclicalkyl halide by reaction with the appropriate amine or the benzoheterocyclic amine by condensation with a 5,5-bis(β-haloethyl)barbituric acid.

3,684,813

HEXAHYDROPYRAZINOISOQUINOLINES

Sydney Archer, and John W. Schulenberg, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 826,681, May 21, 1969, Pat. No. 3,557,120, which is a continuation-in-part of Ser. No. 569,021, Aug. 1, 1966, abandoned. This application April 8, 1970, Ser. No. 26,767

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **8 Claims**

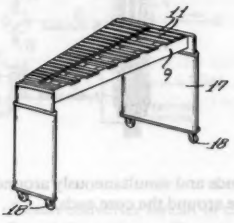
Reaction of a 1-aminomethyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinoline with an aldehyde or ketone effects ring-closure to an imidazo compound, viz., a 1,2,3,5,6,10*b*-hexahydro-8,9-dimethoxyimidazo[5,1-a]isoquinoline and alkaline treatment of the related 1-[N-(α-halo lower-alkanoyl)]-aminomethyl-2-benzyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinoline effects ring-closure to a pyrazino compound, viz., a 1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H-pyrazino[2,1-a]iso-quinoline. The final products possess sedative, tranquilizing and related pharmacodynamic effects.

ERRATA

For Classes 423—284 and 423—658 see: Patents Nos. 3,684,432 through 3,684,447

ELECTRICAL

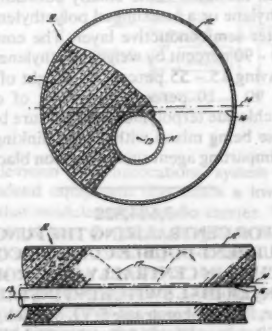
3,684,814
METHOD AND APPARATUS FOR AMPLIFYING VIBRATIONS PRODUCED FROM MUSICAL INSTRUMENTS
Herbert M. Neustadt, Annapolis, Md., assignor to Ludwig Industries, Chicago, Ill.
Filed May 20, 1970, Ser. No. 38,995
Int. Cl. G10h *3/02*
U.S. Cl. 84—1.04 **12 Claims**



An apparatus for amplifying vibrations produced from musical instruments and contemplates a resistive, metal film strain gauge secured to a vibrating part of a musical instrument. For vibraphones, xylophones, and marimbas, each bar is provided with a strain gauge. The strain gauges outputs are combined to drive an amplifier which operates a loudspeaker. The invention also contemplates the use of an electronic squelch circuit.

3,684,815
Patent Not Issued For This Number

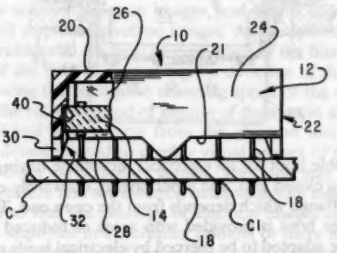
3,684,816
COOLING SYSTEM FOR FOAM INSULATED BUS
David H. Reighter, Roslyn, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed June 15, 1971, Ser. No. 153,167
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **8 Claims**



In isolated phase bus systems comprising spaced substantially parallel aligned inner and outer tubular conductors, the interior space thereof being filled with a dielectric foam insulation made up of a predetermined percentage of open cells to enable free migration of vapors. A liquid dielectric having an appropriately selected and relatively low boiling point is inserted into the bus until it reaches a level whereby it substantially covers the inner conductor which is supported by the foam insulation. Conduction of current raises the bus temperature. If the magnitude of the current is such as to raise the temperature above a predetermined level, the liquid dielectric boils and vaporizes. The vaporized dielectric tends to move to a cooler zone within the structure and become condensed whereby the liquid dielectric continuously recirculates through the system to prevent the bus from exceeding a predetermined operating temperature. The controlled amount of the open cells provided in the foam and the positioning of the inner conductor below the longitudinal axis of the outer conductor substantially reduces the amount of liquid dielectric required with no reduction in dielectric withstand.

The liquid dielectric may for example be taken from the group comprised of freons, ucons, or other liquids having predetermined relatively low boiling points and having the characteristics that they are non-reactive with the dielectric foam insulation.

3,684,817
ELECTRONIC MODULE AND CAP THEREFOR
Charles E. Card, Jr., Philmont; Daniel J. Donovan, and William G. Sweeney, both of Hopewell Junction, all of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.
Filed March 4, 1971, Ser. No. 120,908
Int. Cl. H05k *5/03*
U.S. Cl. 174—52 R **1 Claim**

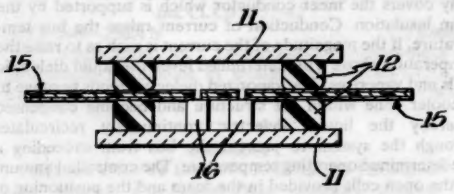


A cap is provided for an electronic module adapted to be mounted on a circuit board. The cap includes a skirt for surrounding a substrate which carries a number of elongated pins. Feet project from the skirt so that the substrate will be spaced from the circuit board. A number of internal ramps are carried by the feet and snap into place underneath the substrate to thereby retain the substrate within the cap, yet permit the substrate to be removed from the cap when desired.

3,684,818
MULTI-LAYER BEAM-LEAD WIRING FOR SEMICONDUCTOR PACKAGES
Paul H. Netherwood, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Oct. 20, 1970, Ser. No. 82,286
Int. Cl. H05k *5/06*
U.S. Cl. 174—52 S **4 Claims**

A ceramic package having Kapton reverse beam leads with two sided wiring boards, plated thru holes, and pinouts on the exterior of the package. This package is bound together with

preformed sheet adhesive and heat bonded together as are standard packages, but at a lower temperature. The leads are



part of the interconnecting pattern and can be made as one piece, and eliminates many connections from inside to outside the package.

3,684,819

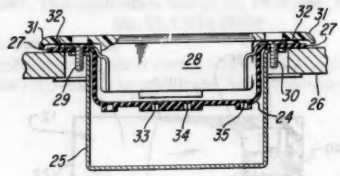
SEALING BOOT FOR AN ELECTRICAL RECEPTACLE

Ronald G. Wilson, 207 Colfax, Cadillac, Mich.

Filed Feb. 25, 1971, Ser. No. 118,915

Int. Cl. H02g 3/08

U.S. Cl. 174—53 **4 Claims**



A flexible boot for an electrical receptacle having an open end and a closed end, and a peripheral, outwardly-extending, resilient flange which depends from the open end. The closed end of the boot is provided with areas of reduced thickness which are adapted to be pierced by electrical leads connected to the receptacle. The boot is employed in combination with an electrical outlet box and a receptacle situated therein so that the receptacle is surrounded by the boot and the resilient flange of the boot is held between the outer rim of the outlet box and a flange on the receptacle in a sealing relationship.

3,684,820

JOINTS FOR HIGH TENSION LINES, CABLES AND THE LIKE

Leif Johnsen, Oslo, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

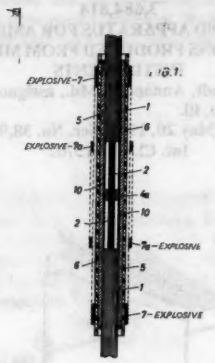
Filed Dec. 1, 1970, Ser. No. 94,097

Claims priority, application Norway, Dec. 2, 1969, 4754/69

Int. Cl. H02g 15/08

U.S. Cl. 174—90 **4 Claims**

An arrangement in detonation joining of high tension lines, cables and the like in which the core ends of the lines to be joined are connected by a steel tube compressed around same and the line ends are connected by a main connecting aluminum tube compressed around same and the steel tube. The steel tube is provided with crosssection reducing grooves or slots so adapted that a complete and safe joint can be procured by means of a single explosive charge which is placed external on the main connecting tube and during detonation causes the main connecting tube to compress



around the line ends and simultaneously around the steel tube compressing same around the core ends.

3,684,821

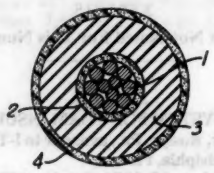
HIGH VOLTAGE INSULATED ELECTRIC CABLE HAVING OUTER SEMICONDUCTIVE LAYER

Hirokazu Miyauchi, and Hironaga Matsubara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed March 30, 1971, Ser. No. 129,558

Int. Cl. H01b 7/00

U.S. Cl. 174—102 SC **7 Claims**



This invention relates to an insulated cable having an outer semiconductive layer, and more particularly relates to the structure of an insulated cable chiefly consisting of a crosslinked polyethylene or a crosslinked polyethylene copolymer, having an outer semiconductive layer. The composition is a mixture of 10 – 90 percent by weight of ethylene-vinyl acetate copolymer having 15 – 55 percent by weight of vinyl acetate content with 90 – 10 percent by weight of ethylene-vinyl acetate-vinyl chloride terpolymer, said mixture being used as a base, said base being mixed with a cross-linking agent and a conductivity imparting agent such as carbon black.

3,684,822

METHOD FOR CENTRALIZING THE FUNCTIONS OF SINGLE CURRENT-DOUBLE CURRENT CONVERTER CIRCUITS IN CENTRALLY CONTROLLED TELEPRINTER DIAL SWITCHING INSTALLATIONS

Henrik Muller, 8 Nonenhorstrasse 5/VI, Munich, 60, Germany

Filed Dec. 10, 1969, Ser. No. 883,803

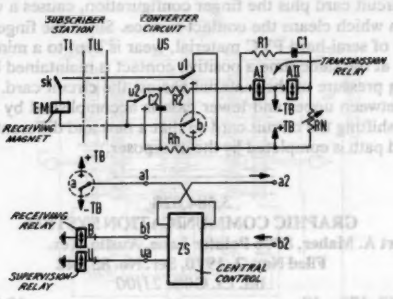
Claims priority, application Germany, Dec. 11, 1968, P 18 14 054.0

Int. Cl. H04l 11/02

U.S. Cl. 178—4.1 R **7 Claims**

A method is described for the conversion of single current to double current signals in teleprinter dial switching installations having a central control. The control system operates to

control the converter by generating operating cycles in response to incoming polarity changes. Each new polarity is forwarded, and connection supervision signals are generated



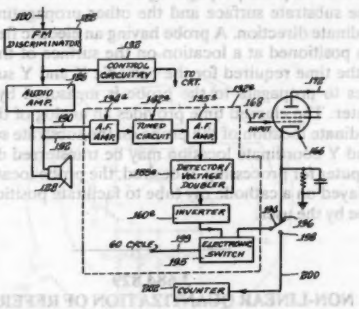
for the control of each converter circuit in the system. In the disclosed embodiment the system utilizes a converter circuit for each subscriber.

3,684,823

TELEVISION COMMUNICATIONS SYSTEM

David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation, Alachua, Fla.

Filed Dec. 9, 1970, Ser. No. 96,456
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 **16 Claims**



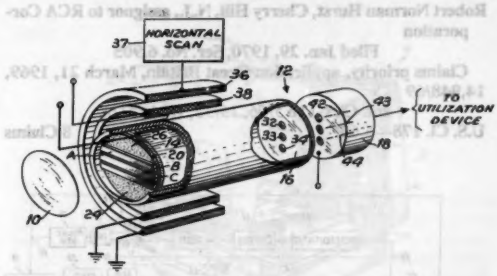
A cable television communications system has signal processing headend equipment that emits a low frequency control signal that modulates the audio carrier. The control signal is transmitted over the cable along with the video and audio information. The control signal actuates control circuitry in a receiver. In the absence of the control signal the receiver will be disabled by reason of a disabling signal being applied to a critical circuit of the receiver. When the control signal is received, however, the disabling signal is removed and the receiver operates normally. For subscription television programs, another low frequency audio control signal may be sent over the cable to actuate another control circuit and jam a channel with another disabling signal. The second disabling signal may be manually switched out by a subscriber who at the same time activates a timing device to record the subscription viewing time.

3,684,824

MULTISPECTED IMAGING SYSTEM

Edward W. Koenig, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed March 16, 1970, Ser. No. 19,931
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST **8 Claims**



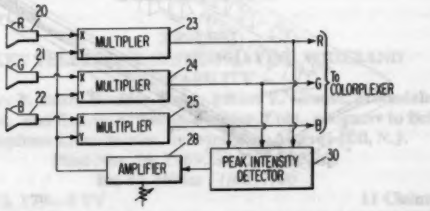
A multispectral imaging system is positioned for movement relative to a scene to provide images of the scene in multispectrum. The system includes a plurality of filter strips for passing different spectral bands, such as different colors, to provide a plurality of radiation images of the field of view being scanned. The strips are positioned with respect to an image dissector tube so that the radiation images of the view are converted into electron images. The tube includes a photoemissive cathode at one end that converts the plurality of radiation images into corresponding electron images and an apertured electrode located at the other end. The system also includes means for scanning the electron images transversely across the apertured electrode, an electron multiplier or amplifying the scanned electron images, and means utilizing the scanned and amplified electron images. As the system traverses a path relative to the field of view, each of the filters scans a section of the field of view along the direction of the movement. Knowing the transverse scanning speed of the electron beam and the relative speed of motion of the system along the path, the signal information from the electron images can readily by demultiplexed to display visual images of the field of view in color on a display screen. The tube may include only one aperture and the electron beam scanning means may be adapted so that the plurality of electron images scans the aperture in sequence in a multiplex fashion, or there may be a corresponding plurality of apertures, each simultaneously being scanned by one electron image from a respective filter strip and photocathode portion.

3,684,825

CONTRAST COMPRESSION CIRCUITS

Robert Adams Dischert, and John Francis Monahan, both of Burlington, N.J., assignors to RCA Corporation

Filed Feb. 19, 1971, Ser. No. 117,016
Int. Cl. H04n 9/53
U.S. Cl. 178—5.4 R **8 Claims**



Apparatus for a television camera is described wherein the highest peak intensity of one of the primary colors is

processed to form a multiplying control signal. The control signal is used to compensate a video signal in order to obtain a reduced range of contrast values capable of being adequately displayed by the system.

3,684,826

SYSTEM FOR RECORD MEDIUM CONTROL AND EDITING

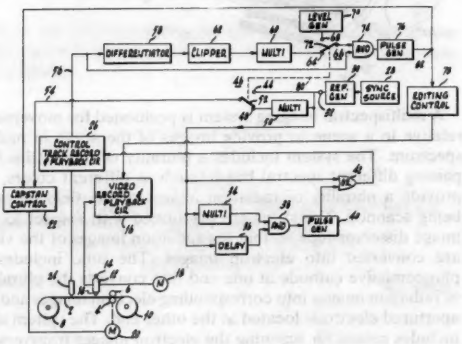
Robert Norman Hurst, Cherry Hill, N.J., assignor to RCA Corporation

Filed Jan. 29, 1970, Ser. No. 6,905

Claims priority, application Great Britain, March 21, 1969, 14,948/69

Int. Cl. G11b *5/06, 15/52;* **H04n** *5/78*

U.S. Cl. 178—6.6 P **8 Claims**



A technique is disclosed for alleviating problems in manually and/or electronically splicing and editing video information on a record medium utilized in recorder-reproducer systems. The technique solves the dilemma between making the edit pulse rate low enough to define color frame rate, and making the edit pulse rate high enough for rapid capstan lock up. To accomplish this, dual frequency information which may take the form of the alternation of single pulses and pulse doublets on the control track is utilized.

3,684,827

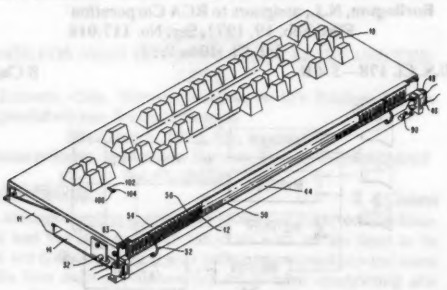
KEYBOARD

Walter E. Parry, La Grangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1970, Ser. No. 48,960

Int. Cl. H04l *15/12*

U.S. Cl. 178—17 C **19 Claims**



A printed circuit keyboard in which a printed circuit card carries character encoding. Interposers are constructed with projecting fingers made of conductive polyvinyl chloride (PVC) material. Actuation of a key initiates a mechanical operation which moves the fingers against copper areas of a circuit card. The contact between the interposer fingers and the circuit card completes a current to a semiconductor sensing circuit. The motion of the interposer fingers against the circuit card plus the finger configuration, causes a wiping action which cleans the contact surface. Since the fingers are made of semi-hard PVC material, wear is kept to a minimum while at the same time a positive contact is maintained by the spring pressure of the material against the circuit card. Shifting between upper and lower case is accomplished by physically shifting the circuit card so that a new and differently encoded path is completed by the interposer.

3,684,828

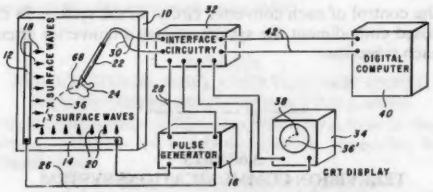
GRAPHIC COMMUNICATION SYSTEM

Robert A. Maher, 8906 Pointer Lane, Austin, Tex.

Filed Nov. 2, 1970, Ser. No. 85,942

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **10 Claims**



Disclosed is a man-to-computer real-time graphic communication system that includes a piezoelectric substrate having a major surface defining an X, Y coordinate system. A pair of interdigitated surface wave transducers orthogonally disposed on the substrate surface transform periodic clock pulses from a pulse generator into two discrete surface wave pulses, one surface wave pulse propagating in the X coordinate direction of the substrate surface and the other propagating in the Y coordinate direction. A probe having an electric field detector tip is positioned at a location on the surface of the substrate and the time required for the periodic X and Y surface wave pulses to propagate to the probe is measured by a suitable counter. The elapsed time provides an analog of the X and Y coordinate location of the probe on the substrate surface. The X and Y coordinate location may be transferred directly to a computer for processing. If desired, the probe location may be displayed on a cathode ray tube to facilitate positioning of the probe by the user.

3,684,829

NON-LINEAR QUANTIZATION OF REFERENCE AMPLITUDE LEVEL TIME CROSSING INTERVALS

Thomas Patterson, Wayside, Ocean Road, Hart Station, Hartlepools, England

Filed May 14, 1970, Ser. No. 37,170

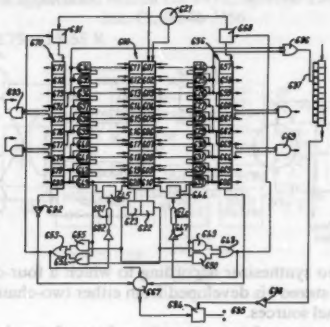
Claims priority, application Great Britain, May 14, 1969, 24,525/69

Int. Cl. G10l *1/02*

U.S. Cl. 179—1 SA **22 Claims**

Method and apparatus for digitally encoding and decoding an electrical waveform such as a speech signal. The method of digitally encoding includes the steps of determining the time interval between successive occurrences of predetermined amplitudes, producing a quantized digital output indicative of the length of each time interval, modifying the quantized digital signal by the transposition of selected quantized pulse lengths into predetermined quantized pulse lengths thus producing a non-linear quantization of the digital output signal. The method of decoding comprises the steps of deter-

mining the length of each pulse of the digital signal, delaying the digital signal while adjusting the frequency response of a



variable output circuit in dependence on the pulse length, and passing the signal through the now adjusted output circuit.

3,684,830

AMPLIFIER MOUNTED ON ROTOR OF GAIN CONTROL DEVICE

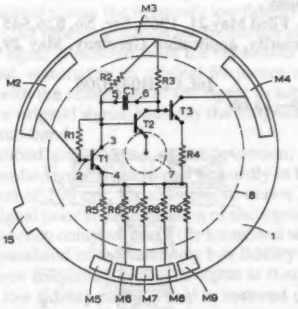
Robert Gordon Maclagan, and Geoffrey William Griffiths, both of Cambridge, England, assignors to Pye Limited

Filed Feb. 11, 1970, Ser. No. 10,495

Claims priority, application Great Britain, Feb. 12, 1969, 7,633/69; Feb. 12, 1969, 7,634/69

Int. Cl. H03g *3/00*

U.S. Cl. 179—1 A **10 Claims**



The present invention relates to amplifying arrangements of sub-miniature construction which are provided with means for varying the gain of the amplifier. In particular, though not exclusively, the invention relates to hearing aids of the "behind the ear" type. The amplifier circuit is supported by a disc of insulating material. Around the periphery of the disc there is a plurality of discrete areas of conductive material adapted for both external connection from the disc and connection to the amplifier circuit. At least some of these conductive areas are connected to the amplifier circuit by resistors thereby forming a gain control device for the amplifier. The disc is rotatably mounted and adapted to serve as the rotor of the gain control device.

3,684,831

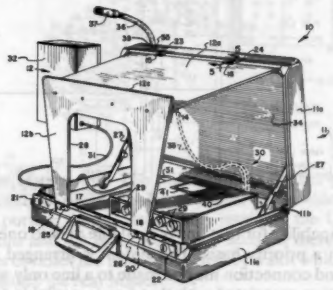
PORTABLE LECTURN UNIT

Richard K. Fullmer, Salt Lake City, Utah, assignor to Electronic Development Corporation, Salt Lake City, Utah

Filed Oct. 19, 1970, Ser. No. 81,648

Int. Cl. H04r *27/00*

U.S. Cl. 179—1 AT **10 Claims**



A portable lecturn consisting of a hinged lecturn platform support constructed and arranged to be locked into the latching mechanism of an open hinged container such as an attache case, whereby a rigid, box-like housing affording access to sound receiving and transmitting equipment therewithin and mounting a microphone stand assembly is provided. When not in use, the hinged platform-support folds and is stored within the case along with the microphone stand assembly and the sound receiving and transmitting equipment.

3,684,832

ACOUSTICAL DATA SET/TERMINAL TESTER

Gilbert R. Marguth, Jr., Livermore, Calif., assignor to Livermore Data Systems Inc., Livermore, Calif.

Filed March 6, 1970, Ser. No. 17,051

Int. Cl. H04m *11/06*

U.S. Cl. 179—2 DP **6 Claims**

FIG. 2A	FIG. 2B	FIG. 2C

A device for monitoring, recording, interfacing, and otherwise processing data in FSK or bilevel DC form including interfaces for telephone handsets, business machines, and teletype terminals, a data set, one or more magnetic tape recorders, and switching functions for performing various operations in order to test terminal units, data lines and to save online time when working with time-shared computers.

3,684,833

KEY TELEPHONE SYSTEM HAVING WIDEBAND CAPABILITY

Stanley E. Bush, Boulder, Colo.; Parker E. Crouse, Scottsdale, Ariz., and George E. Saltus, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

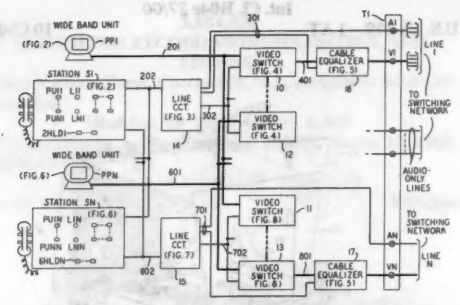
Filed Nov. 10, 1969, Ser. No. 875,261

Int. Cl. H04m *11/08, 1/00*

U.S. Cl. 179—2 TV **11 Claims**

A key telephone system is arranged to provide wideband service to any number of stations served by the system. Wideband switches are associated with each station on a per-line

basis and are arranged to function in conjunction with the associated station and with a line circuit common to all the stations to establish wideband connections selectively to any station. The switches on each line are connected such that wide-



band capability for that line is available only to one station at a time on a priority basis. The system is arranged such that a wideband connection may be made to a line only when at least one station associated with that line is available for such service.

3,684,834

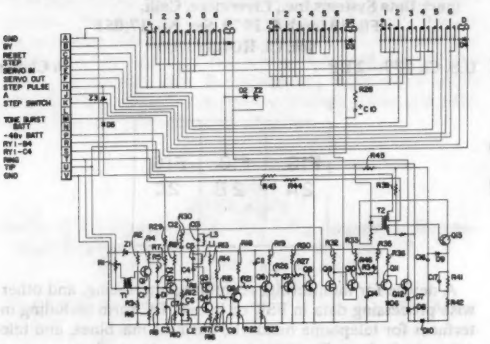
APPARATUS FOR REMOTELY CHANGING THE MESSAGE OF AN AUTOMATIC ANNOUNCING MACHINE

Ellis H. Bryant, Jr., Atlanta, Ga., assignor to The Audichron Company, Atlanta, Ga.

Continuation of Ser. No. 787,634, Dec. 30, 1968, abandoned. This application July 10, 1970, Ser. No. 56,183

Int. Cl. H04m 1/64

U.S. Cl. 179—6 E **16 Claims**



An encoding device for the remote programming of announcing systems such as weather announcing systems includes circuitry for signalling a central location and altering the information to be relayed to a subscriber from the announcing apparatus by dialing coded information symbolic of the desired information to be relayed. The information is encoded into alternating frequencies by an encoder to position a four stage resistor stepping switch to provide the necessary operating signals for selecting the desired announcement. The encoder apparatus includes circuitry to relay the coded announcement signal to the remote location and circuitry for signalling the central telephone system that the announcing information is being altered and to prevent access to the announcing system by subscribers. The encoder may be tied electrically into the telephone system or be connected into the telephone system via the programmer's telephone mouthpiece.

3,684,835

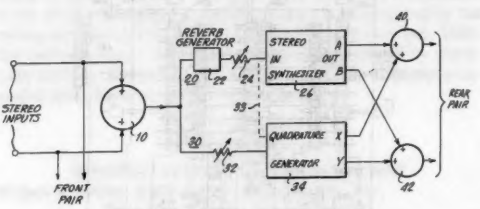
FOUR CHANNEL STEREO SYNTHESIZER

Robert Arnold Orban, Menlo Park, Calif., assignor to Parasound, Inc., San Francisco, Calif.

Filed July 29, 1970, Ser. No. 59,186

Int. Cl. G10l 1/10

U.S. Cl. 179—1 G **4 Claims**



A stereo synthesizer according to which a four-channel "surround stereo" is developed from either two-channel or single-channel sources.

The system performs a number of transformations on the source material, and the resulting signals are reproduced through two sets of loudspeakers, one set of these loudspeakers being located in front of the listener and the other set of loudspeakers being located behind the listener. As a consequence if this arrangement, the listener is afforded a sense of space and dimension which is superior to the sensation produced through one or two loudspeakers.

3,684,836

Patent Not Issued For This Number

3,684,837

METHOD FOR THE SYNCHRONIZATION OF OSCILLATORS PERTAINING TO AT LEAST TWO LONG DISTANCE COMMUNICATION NETWORK SYSTEMS

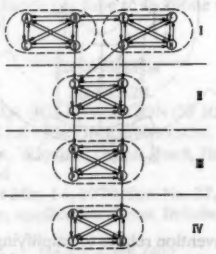
Lothar Hartmann, Boschetsriederstrasse 121, 8000 Munich 25, Germany

Filed May 21, 1969, Ser. No. 826,545

Claims priority, application Germany, May 29, 1968, P 17 66 477.6

Int. Cl. H04j 3/06

U.S. Cl. 179—15 BS **2 Claims**



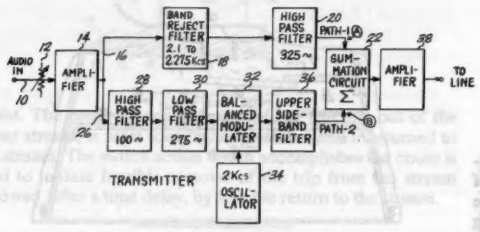
A method for the synchronization of oscillators pertaining to at least two long distance communication network systems, the oscillators of each long distance communication network system being reciprocally synchronized within, the long distance communication network systems having exchange systems operating in multiplex manner according to a scanning pattern.

At least one oscillator of one of the at least two long distance communication network systems is synchronized by at least one oscillator of at least one other of the at least two long distance communication network systems.

3,684,838
SINGLE CHANNEL AUDIO SIGNAL TRANSMISSION SYSTEM

Leonard R. Kahn, Freeport, N.Y., assignor to Kahn Research Laboratories, Inc., Freeport, L. I., N.Y.

Continuation of Ser. No. 740,173, June 26, 1968, abandoned.
This application March 15, 1971, Ser. No. 124,406
Int. Cl. H04b 1/66
U.S. Cl. 179—15.55 R 7 Claims



A system and method for transmitting relatively high fidelity audio signals (e.g., speech and music signals having frequencies from about 100 cps to about 3,000 cps or higher) across an audio signal transmission channel characterized by a passband which effectively transmits only a portion of the frequency components making up the audio signals (e.g., a telephone line with a passband of about 300–3,000 cps or higher, or a radio frequency carrier wave restricted to a comparable low fidelity signal modulation, for example). In the preferred embodiment of the invention, a relatively narrow-sub-band of frequencies are blocked from the frequency spectrum of the signal to be transmitted in a range (e.g., about 2.1 – 2.275 kcs) where the effect of such blocking cannot be perceived by a listener at the receiving station. The signal components in a lower frequency range (e.g., about 100 – 275 cycles) which have a significant effect on the naturalness of the audio signal ultimately heard at the receiving station are translated in frequency to derive a frequency-displaced signal falling within the frequency range of the blocked sub-band, and combined with the remainder of the audio signal. The resultant signal is then transmitted across the relatively low fidelity transmission channel. At the receiving station the frequency-displaced portion of the signal is isolated from the remainder of the transmitted signal, restored to its original frequency range and recombined with the remainder of the signal to substantially reestablish the original signal, less only the insignificant blocked frequency sub-band.

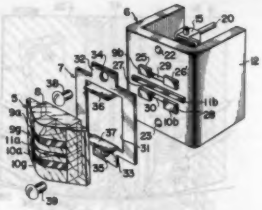
In a modified embodiment of the invention, substantially the entire audio signal is translated upwardly in frequency by an increment of 200 cps, for example, to derive a frequency-displaced signal prior to transmission of the signal. All but the highest frequency components of the translated signal thus fall within the passband of the relatively low fidelity transmission channel. Such frequency-displaced signal is then transmitted across the low fidelity channel and is restored to its original frequencies at the receiving station.

3,684,839
MAGNETIC TRANSDUCER HEAD WITH SEPARABLE POLE TIPS

Ko Homma, Tokyo, Japan, assignor to Akai Electric Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 84,959
Claims priority, application Japan, Oct. 31, 1969, 44/87314; Dec. 5, 1969, 44/115652; Dec. 5, 1969, 44/115653
Int. Cl. G11b 5/28
U.S. Cl. 179—100.2 C 4 Claims

A magnetic head has a front head portion which is adapted to engage with a rear head portion. The front head portion has a front holder which includes a plurality of core tips and a plurality of front shield plate sections in spaced relationship to each other. The rear head portion has a rear holder which includes a plurality of U-shaped core portions and a plurality of rear shield plate sections in spaced relationship to each other. The number of U-shaped core portions provided is equal to

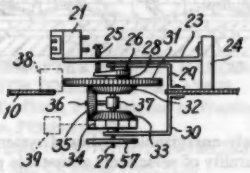


the number of core tips. The rear holder is further provided with a plurality of pairs of holes, the same being widened at a frontward portion thereof, for fixedly retaining the U-shaped core portions and the rear shield plate sections therein. Each of the pairs of holes are interconnected by a slot which is also provided within the rear holder.

3,684,840
MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS USING A SMALL CYCLE TIME ENDLESS TAPE WITH MOVABLE HEAD FOR REPLAY

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed April 14, 1971, Ser. No. 133,860
Int. Cl. G11b 21/08, 23/04
U.S. Cl. 179—100.2 CA 5 Claims



A magnetic tape recording and reproducing apparatus which comprises an endless magnetic tape of little re-cycle time, a driving means for the tape, a recording and reproducing circuit with a magnetic head for recording and reproducing the tape, a rotary cam for vertically moving the magnetic head transversely of the tape, a first cam driving means for continuously rotating the cam as the tape is transported, and a second cam driving means for steppedly rotating the cam in the direction opposite to the direction that the cam is rotated by the first cam driving means, and wherein a spiral recording track is continuously formed, the magnetic head being intermittently moved as the cam is rotated by the second driving means thereby reproducing the recorded information upon returning back for the period multiple of integral number of the re-cycle time of the tape.

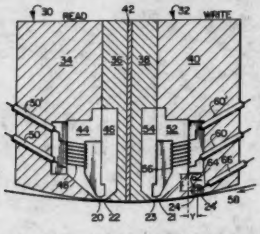
3,684,841
MULTI-CHANNEL MAGNETIC TRANSDUCER STRUCTURE HAVING FULL WIDTH ERASE HEAD IN NON-MAGNETIC HOUSING

Robert M. Boehme, Bolton, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1969, Ser. No. 889,055
Int. Cl. G11b 5/28, 5/26, 5/42
U.S. Cl. 179—100.2 C 3 Claims

A magnetic transducer structure having an erase core integrally fabricated therewith. The recording/reproducing

structure can be provided in a single channel read/write head configuration or a multi-channel read after write head configuration. The erase core is embedded within the magnetic transducer structure and is cylindrical in shape, having an



open center portion adapted to accommodate an erase winding and further including a transverse gap that forms a part of the working surface of the magnetic transducer structure. The mass of the erase core is small, eliminating or reducing problems of magnetic retentivity.

3,684,842

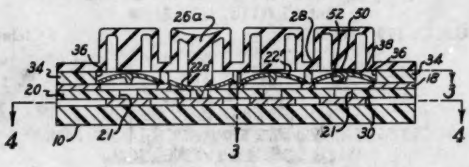
PUSHBUTTON KEYBOARD SWITCH ASSEMBLY WITH IMPROVED OVER CENTER DIAPHRAGM CONTACT

Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 1, 1970, Ser. No. 51,464

Int. Cl. H01h *13/26*

U.S. Cl. 200—5 R **32 Claims**



A selectively energizable keyboard system is disclosed including a plurality of selectively actuatable pushbutton members having exposed surfaces adapted to be symbolized in accordance with electronic functions generated by actuation of the pushbutton members, and having opposed surfaces adapted to transmit force in response to actuation. A plurality of conductive elements are supported in registration with the opposed surfaces of the pushbutton members, each having a dished surface of curvature when in an unactuated condition and adapted to be deflected into an over-center position in response to application of force by a pushbutton member. A conductive member having a plurality of contact areas in electrical contact with the conductive elements is arranged adjacent the set of conductive elements. In addition, a plurality of conductive paths are arranged at a surface of a support member facing the conductive member. Each of the conductive paths is adapted to be electrically connected to the conductive member through one of the conductive elements, when the conductive element is deflected into its over-center position.

3,684,843

RETARDED CLOCK DEVICE WITH PIN BALL TYPE SWITCH ACTUATORS

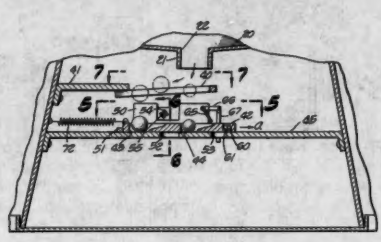
La Vergne C. Jochim, Buena Park, Calif., assignor to Ti-Mind Incorporated, Buena Park, Calif.

Filed Oct. 28, 1970, Ser. No. 84,822

Int. Cl. H01h *3/16, 7/08*

U.S. Cl. 200—35 R **10 Claims**

A signaling device is disclosed in which an object such as a ball is placed in an opening in a generally horizontal disc. Although the opening is large enough for the passage of the ball, the ball is held in the opening by a lower concentric disc. This lower concentric disc also contains an opening which will become aligned with the opening in the upper disc which contains the ball. One of these two discs is rotated with respect to the other and when the opening in the lower disc becomes aligned with the opening which holds the object in the upper disc, the object falls through both openings and activates a sensing device which may be connected to an alarm, appliance



or the like. One embodiment of the device utilizes a clock face with openings in the upper disc at 30-minute intervals, the lower disc has a single opening which corresponds with the hour hand of the clock. Thus, if one wishes to signal or activate an appliance at a future time, he places an object in the opening corresponding to that time. When that time arrives, the hole in the lower disc becomes aligned with the hole and object in the upper disc and the object falls through activating a sensing device. Means to discriminate between objects of different sizes are also disclosed.

3,684,844

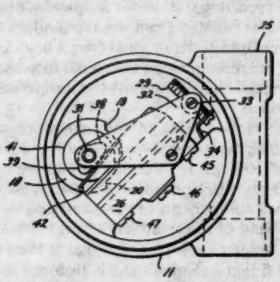
SWITCH

Charles H. Wicke, Richmond, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Company, Houston, Tex.

Continuation-in-part of Ser. No. 817,420, April 18, 1969, abandoned. This application Dec. 31, 1970, Ser. No. 103,310

Int. Cl. H01h *7/08*

U.S. Cl. 200—47 **3 Claims**



A switching device for causing the opening and/or closing of one or more circuits. The device may include (1) pivotal handle, (2) cam, and (3) adjustable post means for adjusting the degree of motion necessary to activate individual switching mechanisms.

3,684,845

ARTICLE COUNTING SENSOR APPARATUS

Charles G. Palmer, 1628 Stafford St., Santa Ana, Calif.

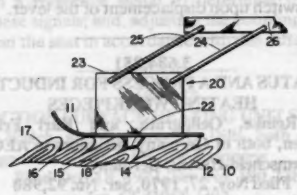
Filed May 8, 1970, Ser. No. 35,621

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.41 **8 Claims**

A sensor of articles and discontinuities in general but particularly suited for counting newspapers arranged in over-

lapping fashion and flowing past the counter in a stream. A trip is engaged by the leading edge of a paper, or other article, and is moved in the direction of stream movement to actuate a switch enabling the use of an external power source to effect a



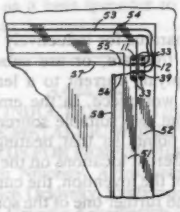
count. The count having been made, the trip lifts out of the paper stream, is reset to an initial position, and is returned to the stream. The switch action which accomplishes the count is used to initiate forcible removal of the trip from the stream followed, after a time delay, by forcible return to the stream.

3,684,846

ALARM DETECTOR SWITCH ASSEMBLY

Thomas McDaniels, deceased, late of 5411 S. Sherman, Littleton, Colo. (by Shirley M. McDaniels, administratrix)

Filed Dec. 24, 1970, Ser. No. 101,326
Int. Cl. H01h *3/02*
U.S. Cl. 200—61.93 **11 Claims**



A detector switch assembly for use in an alarm circuit includes a set of cooperating connecting members specifically adapted to mount on a door or window structure or the like to sense unauthorized movement thereof. Each connecting member includes a similar outer support housing with interchangeable male and female conductive connector blocks releasably inserted into separate compartments in the housings with each block being reorientable in each housing relative to the disposition of that housing. A male plug projects from a face of the block in one of the housings and is adapted to releasably insert into an aligned inwardly extending jack hole in the block in the other housing to establish an electrical connection between the connecting members which connection is broken when one of the connecting members is moved away from the other. A dummy connecting member is releasably received by one of the set of connecting members to permit use of the door or window without actuation of the alarm circuit.

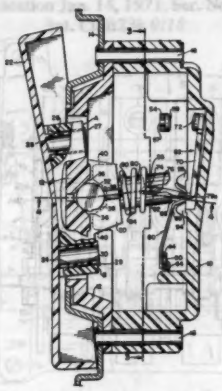
3,684,847

TAP SWITCH

Rudolph Hoehn, Forest Hills, and Harald B. Jadatz, Deer Park, both of N.Y., assignors to Slater Electric, Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 826,339, May 21, 1969. This application Sept. 24, 1970, Ser. No. 75,205
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 A **4 Claims**

A simplified tap switch having a snap action includes a rocker adapted to be pivoted by a tap handle, which is demountably secured to the rocker, with the underportion of the rocker engaging a movable contact arm which rests in a cradle of a link, the link being pivotally secured to a stationary terminal of the switch. A coil spring biases the movable con-



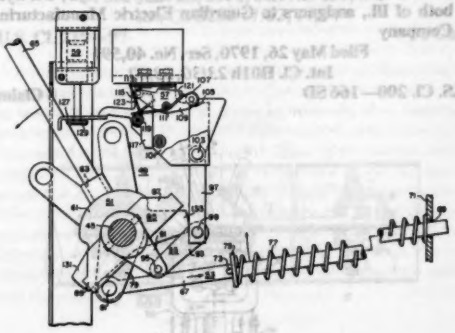
tact arm into the cradle of the link and is arranged on protruding elements so that the pivotal movement of the rocker causes an over-center snap action which moves the movable contact arm between two stable positions.

3,684,848

CIRCUIT INTERRUPTER SPRING CHARGING MEANS WITH TOGGLE TYPE LATCH

Norman Davies, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1971, Ser. No. 106,328
Int. Cl. H01h *3/46, 3/30*
U.S. Cl. 200—153 SC **7 Claims**

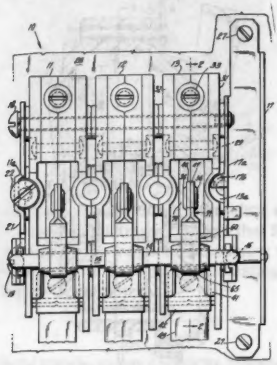


A circuit interrupter is provided with a stored energy over-center spring operating means for operating the interrupter between open and closed positions. A latch device, comprising a toggle-type latch linkage and a latch structure releasably latching the toggle-type latch linkage, latches the operating means in charged positions for the opening and closing operations.

3,684,849
HEAVY DUTY SWITCH

Martin V. Zubaty, Bellefontaine, Ohio, assignor to ITE Imperial Corporation, Philadelphia, Pa.

Filed Jan. 8, 1971, Ser. No. 104,854
Int. Cl. H01h *1/42, 33/08*
U.S. Cl. 200—162 11 Claims

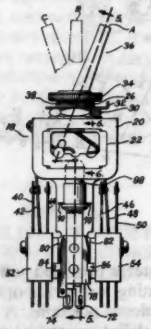


A multipole heavy duty manually or remote control operated switch is constructed of individual pole units stacked side-by-side. Each pole unit includes first and second molded insulating members joined side to side to form a housing having a chamber, and both stationay contacts and an arc chute are within said chamber. A so-called four-bar linkage connects the switch arms to a bail connected to a common operating mechanism. When the switch is open, the movable contact ends of the switch arms extend beyond the confines of the pole unit housings to provide a positive visual indication that the switch is open. Each switch arm is constructed of two abutting sheet metal members having oppositely extending formations providing contact areas and an area for making a mechanical connection to the operating bail.

3,684,850
PROGRAMMABLE LEVER SWITCH WITH SNAP-IN DETACHABLE CAM DETENT MEANS

Charles J. Kaderbek, Winfield, and Frank S. Vojir, Berwyn, both of Ill., assignors to Guardian Electric Manufacturing Company

Filed May 26, 1970, Ser. No. 40,591
Int. Cl. H01h *23/30, 23/02*
U.S. Cl. 200—166 SD 8 Claims

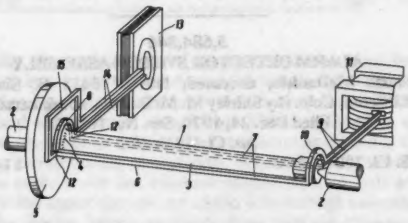


A programmable lever switch has a frame with a pivotally attached lever for manually switching electrical contact leaves by means of switching fingers. The fingers are rigidly attached to one end of the lever. A pair of programmed cam inserts are detachably secured to the frame and engage a detent roller joined between the switching fingers and biased away from the lever. Each pair of cams controls the type of switching action of the lever switch upon displacement of the lever.

3,684,851
APPARATUS AND A PROCESS FOR INDUCTIVELY HEATING WORKPIECES

Friedhelm Reinke, Oelingrath, and Karl Frisch, Wermelskirchen, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Nov. 27, 1970, Ser. No. 92,980
Claims priority, application Germany, Dec. 18, 1969, P 19 63 368.2
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.43 14 Claims

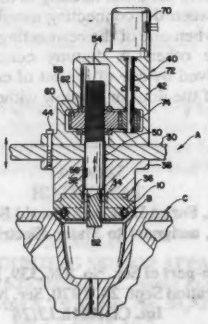


Method and apparatus for inductively heating workpieces, particularly those that are, or are substantially, bodies of revolution by supplying current to a least single conductor loop adjacent the workpiece. In the embodiment described below, current from two suitable sources is supplied to the loop at different points so that heating can be controlled satisfactorily at different locations on the workpiece. According to one aspect of the invention, the currents are supplied at different phases and further one of the sources is connected to the loop by an additional heating conductor.

3,684,852
METHOD AND APPARATUS FOR ADJUSTING THE COUPLING BETWEEN AN INDUCTOR AND VALVE SEAT

Richard F. Seyfried, Parma Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 24, 1971, Ser. No. 118,289
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.57 4 Claims



A method and apparatus for positioning an inductor with respect to a generally circular valve seat of an engine block

which method and apparatus comprises applying a constant current across the inductor; measuring the voltage across the inductor to create a signal representative of the actual coupling of the inductor with the valve seat; comparing the signal with a reference signal to determine the difference between these signals; and, adjusting the coupling between the inductor and the seat in accordance with this difference.

3,684,853

INDUCTION SURFACE HEATING UNIT SYSTEM

Stanley B. Welch, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company

Filed Oct. 18, 1971, Ser. No. 190,228
Int. Cl. H05b *1/02*
U.S. Cl. 219—10.49 6 Claims

An induction surface heating unit system for use in cooking foods having an induction heating coil driven with an ultrasonic frequency wave to pass an alternating magnetic flux through a cooking utensil that is supported on a plate above the heating coil. The utensil is of special laminated construction having a center core of high thermal conductivity, nonmagnetic material and a thin outer skin bonded to the core and being of magnetic and high electrical resistivity material. The induction heating coil functions as the primary winding of a transformer and the outer skin of the utensil functions as a short-circuited single-turn secondary winding such that current flowing through the utensil causes a heating effect to take place in the utensil itself. The impedance of the utensil is matched to the power conversion circuit of the heating coil for best overall efficiency of coupling the power to the load. The center core serves as a heat spreader to distribute the heat uniformly throughout the utensil.

3,684,854

METHOD OF INDUCTION HEATING OF HEAT-TREATABLE METALLIC WORKPIECES AND APPARATUS FOR PERFORMING SAME

Vladimir Filippovich Nikonov, Avtozavodskaya, 7, kv. 116; Anatoly Georgievich Orlovsky, Simferopolsky bulvar, 12/14 korpus 1, kv. 26; Grigory Arkadievich Ostrovsky, Delegatskaya ulitsa, 14/2, kv. 21; Alexandr Moiseevich Riskind, Leninsky prospekt, 32, kv. 272; Anatoly Loginovich Stepin, ulitsa Shumkina, 2/24, kv. 2; Konstantin Zakharovich Shepelyakovsky, Avtozarodskaya ulitsa, 6, kv. 125, and Isaak Nakhimovich Shklyarov, Simonovsky val, 26, kv. 94, korpus 2, all of Moscow, U.S.S.R.

Filed June 10, 1970, Ser. No. 45,002
Claims priority, application U.S.S.R., June 17, 1969, 1336660
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.69 2 Claims

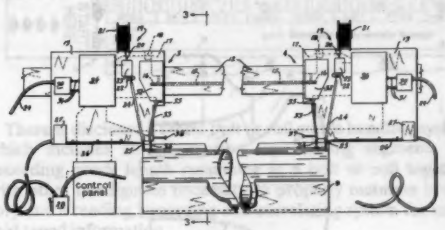
The invention relates to a method of electric induction heating of heat treatable metallic work pieces steel articles and to apparatus for performing said heating.

3,684,855

PROCESS AND APPARATUS FOR SUBMERGED ARC WELDING

George R. Wepfer, 2545 N. 28th St., Wauwatosa, Wis., and Bertil G. Winstrom, 4720 W. Parkview Dr., Mequon, Wis.

Division of Ser. No. 5,510, Jan. 26, 1970, Pat. No. 3,582,601.
This application Jan. 14, 1971, Ser. No. 106,498
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 9 Claims



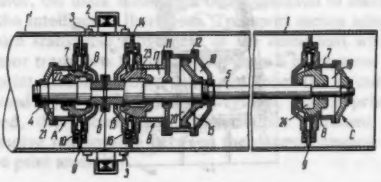
A submerged arc welding process performed on adjacent longitudinal edges of a pipe blank. Two submerged arc welding units are supported on carriages which move on a stationary travel beam over the pipe blank. The welding units start welding at opposite ends of the longitudinal edges and weld toward each other until they meet. At that time one welding unit stops and returns while the second continues forward to overlap the welds while the fused flux remains electrically conductive at the area of overlap. After the second unit merges the welds, it returns.

3,684,856

RESISTANCE BUTT WELDING MACHINE

Viktor Senderovich Lifshits, Karkazsky bulvar, 21, korpus 2, kv. 41, Moscow; Viktor Ivanovich Grigoriev, Poselok Lvorsky, Sadovy proezd, 4, kv. 47, Moskovskaya Oblast; Georgy Nikolaevich Petrov, Izmailovsky bulvar, 34/32 kv. 8, and Oleg Sergeevich Papkov, Samarkardsky bulvar, 24, korpus 3, kv. 3, both of Moscow, all of U.S.S.R.

Filed June 28, 1971, Ser. No. 157,492
Int. Cl. B23k *11/02*, *11/04*
U.S. Cl. 219—97 1 Claim



A machine for [the] resistance butt welding of articles, such as pipes, [featuring] having a welding transformer and two pipe clamps, and an additional pipe clamp located at a distance from one of the [available] first two clamps, [the rigid attachment of the extreme clamps to] a common shaft made up of two [halves as well as rigid fixation of the] lengths joined and secured rigidly to the extreme pipe clamps, a casing of an actuating cylinder rigidly fixed to the intermediate clamp and [of the cylinder piston -] to said shaft.

3,684,857

AIR INTAKES

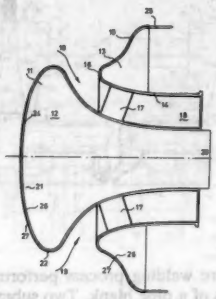
Frederick William Walton Morley, Derby; George Henry Bennett, London; Richard George Harvey, Wiltshire, and Alan Wilson, Hampshire, all of England, assignors to Rolls-Royce Limited, Derby, England

Filed Jan. 29, 1971, Ser. No. 110,973

Claims priority, application Great Britain, Feb. 5, 1970, 05,476/70

Int. Cl. H05b *1/00*

U.S. Cl. 219—201 4 Claims



A gas turbine engine air intake designed to prevent ingestion into the engine of a substantial proportion of any ice or slush present in the incoming air. The air intake comprises a central bullet and an outer casing defining an annular passage therebetween through which air flows to the engine compressor. The central bullet is enlarged at its upstream end to a mushroom shape whose outer periphery lies upstream of and is at a greater radius than the leading edge of the outer casing. In operation the ice and slush is deflected by reason of its greater momentum around the outside of the engine cowl and out of the path of the air drawn into the annular passage.

3,684,858

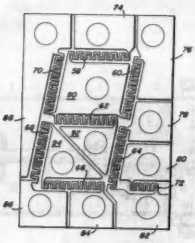
THERMAL PRINTING HEAD

Iwar H. Buck, 25 Broad St., Hudson, Mass.

Filed June 23, 1971, Ser. No. 155,948

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 10 Claims



A thermal printing head comprises a vitreous plate through which a plurality of wires extend, the forward face, including the free extremities of the wires, constituting a planar continuum, and a plurality of vapor deposited sections selectively extending between selected free extremities of wires. The arrangement is such that the thermal coefficient of expansion of the wires and the vitreous plate are alike so that permanent integration of the wires and the plate is effected and bonding of the wires to the vapor deposited sections is assured.

3,684,859

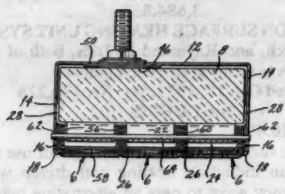
RADIANT HEATER

George B. Desloge, Frontenac, Mo., assignor to Watlow Electric Manufacturing Company, St. Louis, Mo.

Filed Feb. 4, 1971, Ser. No. 112,743

Int. Cl. H05b *1/00*

U.S. Cl. 219—354 9 Claims



A radiant heater is described which includes channel-shaped radiating elements mounted side-by-side in a housing. The channel-shaped elements are metal and give high strength with light weight. The channel-shaped elements have a high emittance surface backed by an air space for uniform distribution across the surface through convection and radiation and are also backed by insulation to reduce back side losses. In construction, each channel-shaped element is formed from nested U-shaped members having a resistance heater positioned therebetween and electrically insulated from the U-shaped members by layers of dielectric material. Electrical connections to the resistance extend from the ends of the elements and may be connected across a suitable source of electrical energy for operation.

3,684,860

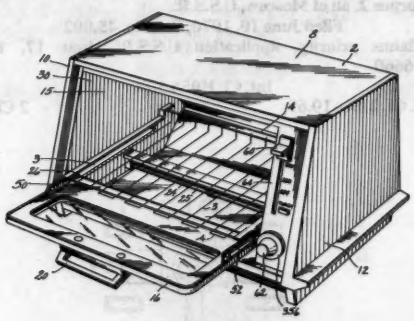
ELECTRIC TOASTER WITH IMPROVED HEAT-UP COOL-DOWN BIMETAL TIMER

Paul V. Snyder, Whitehall, Pa., assignor to General Electric Company

Filed July 22, 1971, Ser. No. 165,203

Int. Cl. F27d *11/02*

U.S. Cl. 219—413 13 Claims



An electric toaster with a heat-up cool-down bimetal timer wherein a separate bimetal timer control blade is positioned between a bimetal and its support for accurately controlling the pivot point of the bimetal during its heat-up cycle. A calibration screw is threaded through an end portion of the bimetal control blade. The calibration screw rests against a cam follower, and an improved arrangement is provided for adjusting the cam follower for reliably setting the toast

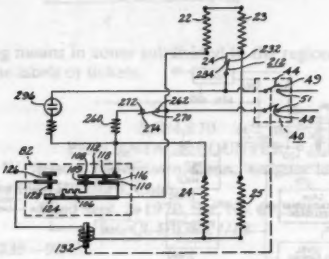
brownness or color. A unique manual ON-OFF mechanism is also provided for allowing or preventing the bimetal timer from automatically moving from its heat-up cycle to its cool-down cycle.

3,684,861

ELECTRIC TOASTER CONTROL

Harold A. De Remer, Allentown, Pa., assignor to General Electric Company

Filed July 22, 1971, Ser. No. 165,204
Int. Cl. F27d 11/02
U.S. Cl. 219—413 **31 Claims**



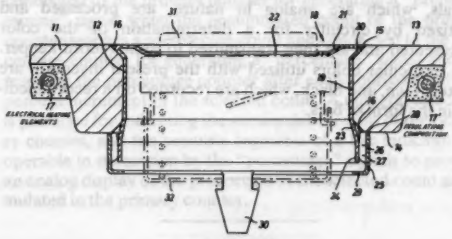
An electric oven toaster with a thermostat for controlling energization of the heating elements when the oven toaster is being operated as an oven, and a timer for controlling energization of the heating elements when the oven toaster is being operated as a toaster. A push button is moved upwardly from an OFF position for increasing the temperature setting when the oven toaster is being operated as an oven and the same push button is moved downwardly from the OFF position for setting the oven toaster for toaster operation.

3,684,862

THERMOSTATICALLY CONTROLLED ELECTRIC COOKER HOT PLATE

Karl Fischer, and Felix Schreder, both of Oberderdingen, Germany, assignors to Mssrs. E. G. O. Elektro-Gerate Blanc u. Fischer, Oberderdingen, Germany

Filed March 16, 1971, Ser. No. 124,830
Int. Cl. H05b 3/68
U.S. Cl. 219—450 **17 Claims**



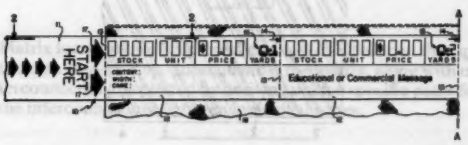
An electric cooker hot plate has an insert for securing a temperature senser to contact the bottom of a cooking vessel placed on the hot plate. The hot plate has an opening in a central unheated portion. The insert has a thin peripheral wall by which the insert is fitted in the bore. The upper rim of the insert is peened over into a recess in the hot plate central portion. The lower end portion of the insert is enlarged and depends below the hot plate. The insert is thereby securely locked in position.

3,684,863

AUTOMATIC INVENTORY CONTROL SYSTEM WITH INFORMATION TAPE

Edwin M. Lieberthal, 86 Fieldstone Lane, Valley Stream, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,893
Int. Cl. G01b 3/10; B65h 61/00; G06k 19/04
U.S. Cl. 235—61.7 R **7 Claims**



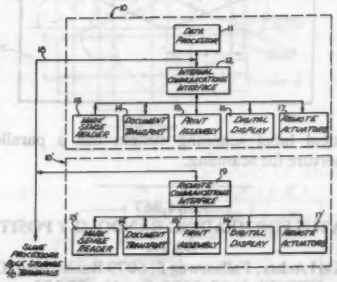
There is disclosed a fabric bolt or roll goods handling system which includes an information tape having segments for recording goods length remaining in a bolt or roll together with other intelligence necessary to properly maintain inventory and a reading, recording and correlating system for using said taped information.

3,684,864

POINT OF ORIGIN DOCUMENT PROCESSOR

Henry M. Call, Costa Mesa; Norman Robert Crain, Huntington Beach; William W. Crain, Santa Ana; Gary L. Pollit, Fountain Valley, and Donald E. Rea, Santa Ana, all of Calif., assignors to Documentor Sciences Corporation, Santa Ana, Calif.

Filed Nov. 9, 1970, Ser. No. 87,708
Int. Cl. G06k 1/12
U.S. Cl. 235—61.9 A **11 Claims**



An apparatus for processing documents at the point of original preparation. A document prepared by the application of mark sense data is transported through the document processor, the mark sense data being detected to thereby extract the intelligence therefrom. Transport means adapted to minimize transverse movement of the document within tee processor transports the document from a mark sense reader to a print assembly. Data extracted from the document is processed by a data processing system, and if printing is required, the document is printed upon pursuant to the cooperative relationship between the data processing system and the print assembly.

3,684,865

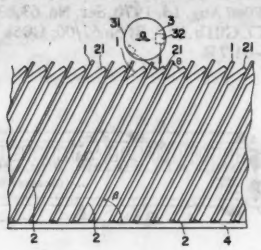
APPARATUS FOR INFORMATION RETRIEVAL

Isamu Sakamoto, Amagasaki, Japan, assignor to Konan Camera Laboratory Company, Ltd., Kobe, Japan

Filed May 27, 1970, Ser. No. 40,782
Claims priority, application Japan, June 11, 1969, 44/46428
Int. Cl. G06k 7/14
U.S. Cl. 235—61.11 E **9 Claims**

One data card, such as a microform card, from rows of thousands of cards in a storage shelf can be automatically

selected by means of an optical reading system in which an optical code reader optically reads out visual codes for information retrieval, said codes consisting of opaque marks and



transparent marks provided on an edge of every card. An output electric signal obtained from the optical reader is usable for controlling mechanical means for retrieving the card.

3,684,866

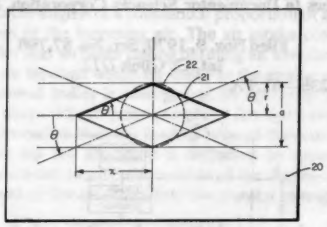
SCANNING APERTURE

Paul W. Jones, Franklin, Mass., assignor to Identicon Corporation, Waltham, Mass.

Filed July 9, 1970, Ser. No. 53,499

Int. Cl. G06r 7/10

U.S. Cl. 235—61.11 E **2 Claims**



An optical label scanning system has a parallelogram-shaped aperture for scanning.

3,684,867

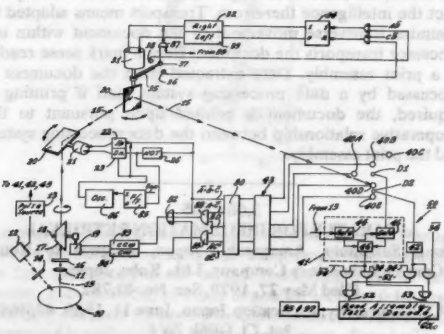
APPARATUS FOR READING RANDOMLY POSITIONED DATA

Norbert Karl Acker, Falltorweg 5, 6079 Buchschlag, Germany

Filed July 15, 1970, Ser. No. 55,006

Int. Cl. G06k 7/015

U.S. Cl. 235—61.11 E **24 Claims**



Randomly oriented data fields with linear tracks are imaged, and the image is aligned for movement in direction of track image extension, during which movement the track images are read bidirectionally, the resulting readout signals being assembled, decoded and tested.

3,684,868

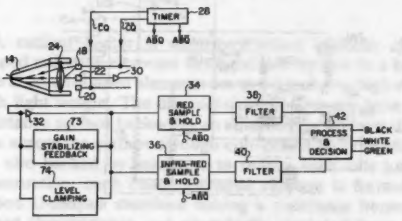
COLOR BAR CODE TAG READER WITH LIGHT-EMITTING DIODES

John B. Christie; Glenn W. Robison, and Raymond C. Runquist, Jr., all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 29, 1970, Ser. No. 85,076

Int. Cl. G06k 7/10; E04g 17/00

U.S. Cl. 235—61.11 E **12 Claims**



A color bar code reader used for detecting and reading recorded indicia having different and distinct light reflective characteristics; i.e., being manifested in the form of colored bars. The reader utilizes a photosensor and two light-emitting diodes, each having a particular output wavelength. The particular embodiment disclosed utilizes a gallium arsenide diode which emits infrared light at 9,000 Angstroms and a gallium arsenide phosphide diode which emits red light at 6,600 Angstroms. In operation, the two light-emitting diodes are alternately pulsed, with the outputs of each being directed an the recorded indicia. A lens system focuses the light-emitting diode radiation onto the recorded indicia. Depending upon the particular colored indicia being utilized, a certain amount of light is reflected, or not reflected, by the colored indicia back to the color bar code reader, where the radiation is concentrated by the lens system for transmission to the solid state photosensor. The photosensor generates a signal proportional to the reflected light which is related to the original light source. Circuitry determines the particular color which reflected the returned light. The generated photosensor signals, which are analog in nature, are processed and digitized by circuitry for a determination of the color represented and are then transmitted to some record keeper. The particular colors utilized with the present invention are white, green, and black, which are recorded on a record medium in the form of bars.

3,684,869

LABEL OR TICKET SYSTEM

Werner Reiter, Werner am Ruhrstein 50, 43 Essen-Bredeney, Germany

Filed July 14, 1970, Ser. No. 54,795

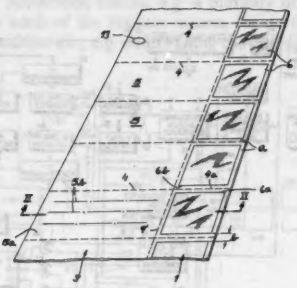
Claims priority, application Germany, July 15, 1969, P 19 35 846.4

Int. Cl. G06k 19/02, 7/08; G11b 5/72

U.S. Cl. 235—61.12 M **4 Claims**

A continuous strip of labels or tickets, separatable transver-

sely of the strip and having broad surfaces adapted to receive legible matter, is provided along an edge with magnetic-

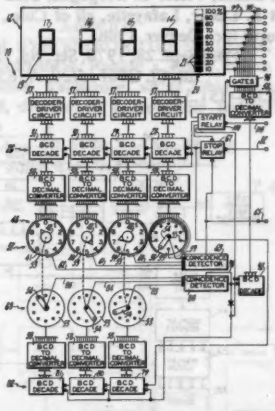


recording means in zones subdivided in the region of separation of the labels or tickets.

3,684,870
PERCENTAGE COUNTER

Howard W. Nelson, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 3, 1970, Ser. No. 69,310
Int. Cl. H03k 21/18
U.S. Cl. 235—92 EA 10 Claims



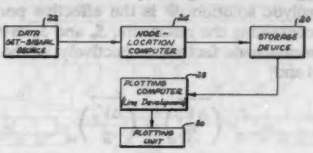
An electronic counter having primary and percentage counters connected to be indexed together and a count selector connected to the primary counter for generating a "predetermining" signal when the accumulated count of the primary counter reaches a preselected count and connected to the percentage counter for generating a "percentage" signal and for resetting the percentage counter after each approximately 10 percent increment of the selected count. A numeral indicator is provided for indicating the accumulated count of the primary counter, and ten separate segments of a bar indicator are operable in succession by the "percentage" signals to provide an analog display of the proportion of the selected count accumulated in the primary counter.

3,684,871
NETWORK PLOTTING SYSTEM

Charles A. Schaffner, Irvine, Calif., assignor to Systonetics Incorporated

Filed Oct. 30, 1970, Ser. No. 85,589
Int. Cl. G06f 15/20
U.S. Cl. 235—150 10 Claims

A system is disclosed for plotting networks wherein the topology problem is initially solved by processing the data in one direction of scanning and subsequently finalizing the network in an opposed direction. During the first scanning, node locations (junctions, terminals, stage points and so on) are formulated into a matrix pattern which is represented by designated signals that are committed to a storage register.

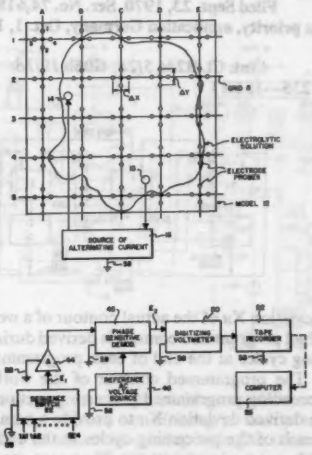


Matrix locations are developed during the initial scan through the data step-by-step. Subsequently, the matrix, along with interconnections, is plotted by deriving unique specific paths for the interconnections between individual nodes.

3,684,872
MEANS AND METHOD FOR AUTOMATICALLY DETERMINING THE INTERFACE POSITIONS OF AN INJECTION FLUID IN A PETROLEUM OR GAS RESERVOIR USING AN ELECTROLYTIC MODEL OF THE RESERVOIR

Alvin O. Clauset, Jr.; Donald L. Hoyt, and Russell W. Hall, Jr., all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,503
Int. Cl. G06g 7/48
U.S. Cl. 235—151.3 11 Claims



An insulated grid, having four electrode probes at each intersection, overlays an analog model, using an electrolytic solution, of a petroleum or gas reservoir so that some or all of the probes are immersed in the electrolytic solution. Electrodes representing an injection well and a withdrawal well in the reservoir introduce an alternating current in the electrolytic solution corresponding to the injection rate of a fluid in the injection well. Alternating current voltages present at the probes, resulting from the alternating current in the electrolytic solution, are processed to provide digital signals. The digital signals are applied to a digital computer which determines the fluid velocity at a point r of the reservoir in accordance with the following vector equations:

$$\overrightarrow{V_{rx}} = 5.614 \frac{QC}{i\phi S_v S_h} \left(\frac{\overrightarrow{\Delta V_x}}{\Delta X}\right)_m \quad 1$$

and

$$\overrightarrow{V_{ry}} = 5.614 \frac{QC}{i\phi S_v S_h} \left(\frac{\overrightarrow{\Delta V_y}}{\Delta y}\right)_m \quad 2$$

where V_{rx} and V_{ry} are the X and Y components, respectively, of the velocity of flow in the reservoir at a point r, Q is the rate of a forcing fluid entering the reservoir, i is the total current in the electrolytic solution, Φ is the effective porosity of the medium containing the reservoirs, S_v and S_h are the vertical and horizontal scale factors, respectively, of the reservoir to the model and

$$\left(\frac{\overrightarrow{\Delta V_x}}{X}\right)_m, \left(\frac{\overrightarrow{\Delta V_y}}{y}\right)_m$$

are voltage gradients in the X and Y directions, respectively, at a point in the model corresponding to the point r in the reservoir. the velocities are used to compute the interface positions of the petroleum or gas and the fluid in the reservoir by determining each incremental change in distance Δs for a point, commonly referred to as a trace point of the interface between the fluid and the petroleum or gas, in accordance with the following equation:

$$\Delta S = (\Delta T)(\text{Vel}) \quad 3.$$

where Vel is the velocity of the trace point as determined from the computed velocities for nearby points of the reservoir and ΔT is an incremental change in time.

3,684,873

METHOD AND APPARATUS FOR ADAPTIVE PROGRAMMED CONTROL OF A TURNING MACHINE TOOL

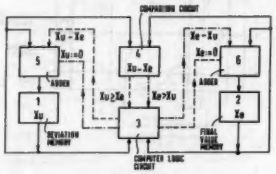
Jurgen Meyer, Adalbert-Stifter 5, and Gerhard Sautter, Mozorstr 28 1/2, both of 8520 Erlanger, Germany

Filed Sept. 23, 1970, Ser. No. 74,618

Claims priority, application Germany, Oct. 1, 1969, P 18 03 742.8

Int. Cl. B23q 5/28; G05b 19/18

U.S. Cl. 235—151.11 **4 Claims**



The deviation Xu of the actual contour of a workpiece from the finished programmed contour is derived during each of the processing cycles at the end of each programmed processing section. The programmed contour of the workpiece in the next-succeeding programmed processing section is compared with the derived deviation Xu to provide a comparison result during each of the processing cycles at the end of each programmed processing section. The next-succeeding programmed processing section is eliminated or utilized in accordance with the comparison results.

3,684,874

AUTOMATIC CUTTER COMPENSATION FOR CONTOURING CONTROL SYSTEMS

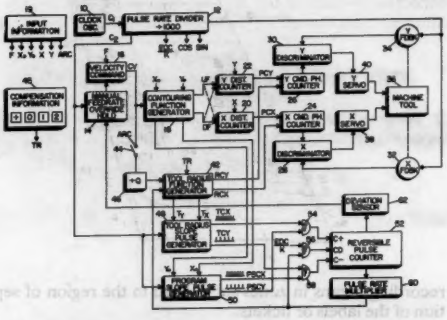
Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company

Filed Dec. 23, 1970, Ser. No. 100,871

Int. Cl. G05b 19/02, 15/02

U.S. Cl. 235—151.11 **16 Claims**

A numerical contouring control system including improvements in the technique of cutter compensation. The basic control system includes a contouring function generator for generating the desired contouring path and a compensating function generator for continuously realigning the offset compensation vector with the angle of the commanded path. A program slope pulse generator is connected to the contouring function generator so as to generate pulses proportional to the contents of the contouring function generator. A tool radius slope pulse generator is connected to the compensating function generator so as to generate pulses proportional to the contents of the compensating function generator. The outputs of the tool radius slope pulse generator and the program slope



pulse generator are compared. If these outputs are found to be unequal, the contents of the compensating function generator are modified so as to automatically keep the tool offset vector aligned with the angle of the contouring path.

3,684,875

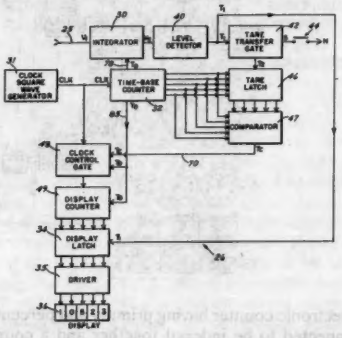
ANALOG-TO-DIGITAL MEASURING APPARATUS

James E. Smith; Victor E. Borgogno, both of Longmont, and Robert E. Luehr, Lafayette, all of Colo., assignors to Wm. Ainsworth Inc., Denver, Colo.

Filed Sept. 28, 1970, Ser. No. 75,981

Int. Cl. G06f 15/20, 7/385

U.S. Cl. 235—151.33 **15 Claims**



In an electronic digital-reading balance, electronic circuitry is provided for automatically deducting tare weight from the weight of an object being weighed wherein a latch circuit stores the digital reading of the tare weight, and a comparator in cooperation with display circuitry is capable of generating and displaying as a digital readout a value equal to the gross weight of the object being weighed less the tare weight stored in the latching circuitry. Although specifically adaptable for use in deducting tare or other given weights in a weigh balance apparatus, the same or similar circuitry has useful application to other analog-to-digital measuring and counting devices.

3,684,876

VECTOR COMPUTING SYSTEM AS FOR USE IN A MATRIX COMPUTER

Ivan E. Sutherland, Salt Lake City, Utah, assignor to Evans & Sutherland Computer Corporation

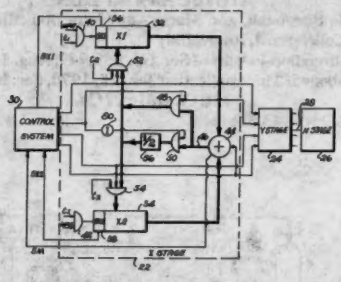
Filed March 26, 1970, Ser. No. 24,053

Int. Cl. G06f 7/385, 7/38

U.S. Cl. 235—152 **4 Claims**

A computing structure is disclosed for vector computation which structure is adaptable to accomplish mathematical solu-

tions by iterative computation. Specifically, the structure includes first and second register means each of which is capable of registering a vector comprising a plurality of distinct components. Arithmetic means, e.g. a plurality of adders, is connected to each of the register means, for performing an arithmetic combination, e.g. determining the average value of



similar components from the two register means. After each cycle, the arithmetic means transfers the results of its operative selectively to one or the other of the register means in accordance with the operation of a control unit. Control may be based upon a sequence of binary bits from an external source, or the signs or other signals developed in the course of computation or a combination thereof.

3,684,877

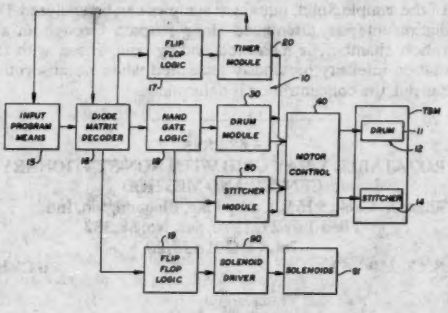
CONTROL SYSTEM FOR TIRE BUILDING

George D. Homa, Northfield; Ronald J. Kindy, North Canton, and Earl D. Miller, Tallmadge, all of Ohio, assignors to Akron Standard, division of Eagle-Picher Industries Inc., Cincinnati, Ohio

Filed Aug. 19, 1970, Ser. No. 65,208

Int. Cl. G06f *15/46*

U.S. Cl. 235—154 **6 Claims**



A control system for tire building wherein a first ply of fabric is wrapped around a rotating drum and thereafter additional "work" is done in relation to the first and subsequently wrapped plies and other tire components. The rotational speed of the drum controls the movement of other mechanical devices which perform the additional "work."

3,684,878

BCD TO BINARY CONVERTER

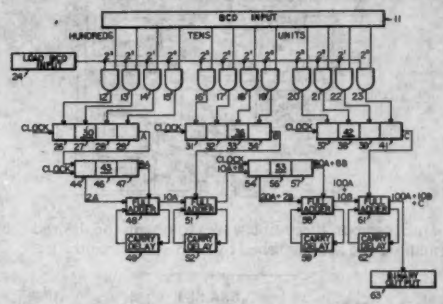
Richard A. Schipper, San Diego, Calif., assignor to Tele Cash, Inc., San Diego, Calif.

Filed Oct. 2, 1970, Ser. No. 77,451

Int. Cl. H03k *13/258*

U.S. Cl. 235—155 **3 Claims**

A BCD to binary converter in which a plurality of shift registers receives BCD inputs in parallel and the outputs of each shift register is serially passed through 10-times multipliers until the proper decimal level is reached; each of the 10-times multipliers being an addition of a two-times and eight-times



multiplier and the sum of the next least significant digit being added after each multiplication.

3,684,879

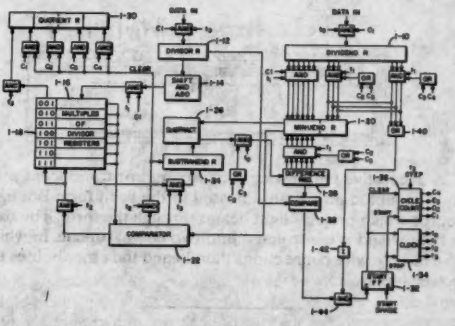
DIVISION UTILIZING MULTIPLES OF THE DIVISOR STORED IN AN ADDRESSABLE MEMORY

Howard A. Koehler, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,777

Int. Cl. G06f *7/52*

U.S. Cl. 235—156 **17 Claims**



A method and apparatus for the arithmetic division operation is disclosed in which a set of integral multiples of the divisor are stored in addresses corresponding to their respective multiplier. Comparison of the highest order multiple less than a predetermined sub-set of the dividend gives first quotient digits corresponding to the address of the multiple. Subtraction of the multiple from the first sub-set and the joining thereto of additional dividend digits gives further sub-sets for which the process can be continued.

3,684,880

SYSTEM FOR TRANSFORMING COORDINATES

Hideo Togawa, and Mitsuo Okamoto, both of c/o Nippon Denshi Kagaku Co., Ltd., 68, Hirakawa Kurumazuka, Joyocho, Kuze-gun, Kyoto, Japan

Filed Sept. 23, 1970, Ser. No. 74,552

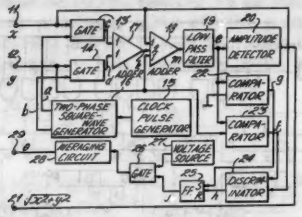
Claims priority, application Japan, Sept. 29, 1969, 44/77617

Int. Cl. G06g *7/22*

U.S. Cl. 235—186 **5 Claims**

Systems for transforming rectangular coordinates to polar coordinates, polar coordinates to rectangular coordinates, and rectangular coordinates to rectangular coordinates are disclosed. In each system, a sine wave is developed whose amplitude is proportional to $x^2 + y^2$, or G, and whose phase rela-

tive to a fixed reference is proportional to $\tan^{-1}y/x$, or θ.



Operations upon these sine waves to obtain the desired transformations are accomplished by solid-state circuitry.

3,684,881

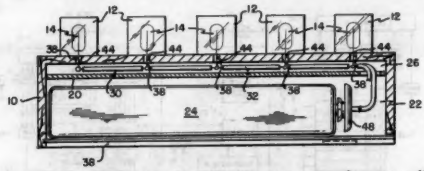
Patent Not Issued For This Number

3,684,882

TRANSPARENT OR TRANSLUCENT DECORATIVE UNIT HAVING AN ENCASED LIGHT SOURCE AND A SELF CONTAINED POWER ARRANGEMENT

Anthony Mininno, 185 W. Houston St., New York, N.Y.; John Slattery, and Mildred Shulman, both of 165 Christopher St., New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,877
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 **4 Claims**



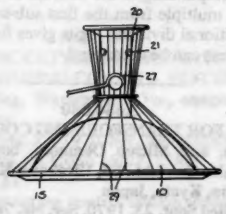
A decorative unit having a transparent or translucent solid form mounted on a base. Encased in the solid form is a light source which projects light beams through the form. The base is hollow and is constructed into two compartments in which one has the wire connections therein and the other houses the power supply.

3,684,883

LAMPHEAD FOR TUNGSTEN-HALOGEN LAMPS

Olive Entwistle, 44 E. 67th St., New York, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,073
Int. Cl. F21v *13/00*
U.S. Cl. 240—92 **6 Claims**



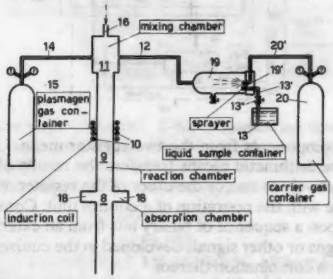
A lamphead for a tungsten-halogen bulb, the lamphead being constituted by a convex reflector joined to a cylindrical chimney having a socket concentrically mounted therein for supporting a cylindrical bulb, thereby defining an annular air space within which a draft is created to cool the bulb. Extending between the periphery of a flange at the upper end of the chimney and the outwardly extending rim at the lower end of the reflector is an array of tensile wires that are spaced from the body of the reflector and of the chimney to form a protective cage making it possible to safely handle the hot lamphead.

3,684,884

APPARATUS TO BE USED FOR THE ANALYSIS OF TRACES OF CHEMICAL ELEMENTS THROUGH ATOMIC ABSORPTION

Corrado Bordonali, and Marie Antonietta Biancifiori, both of Via Colleferro 4, Rome, Italy

Continuation-in-part of Ser. No. 659,949, Aug. 11, 1967, abandoned. This application Jan. 15, 1970, Ser. No. 3,170
Int. Cl. G01n *21/34*
U.S. Cl. 250—43.5 R **2 Claims**



For the purpose of spectrophotometric analysis through atomic absorption technique, an absorption chamber containing an amount of the sample to be analyzed mixed with a plasmogen gas is inserted into the path of a radiation beam having the same frequency as the characteristic frequency of the element to be measured.

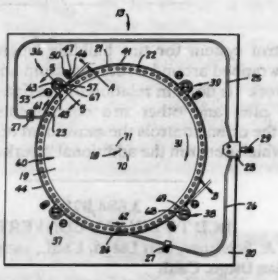
A plasma of a suitable gas,obtained by electromagnetic induction, is used to bring the atoms of the sample to a form capable of producing absorption. A reducing reagent is also added,in a mixing chamber, to the plasmogen gas containing the sample to be analyzed to enhance the absorption capability of the sample.Solid, liquid,gas samples can be analyzed The radiation intensity,attenuated along its path through an absorption chamber, is measured and,by comparison with the radiation intensity previously measured when no absorption occurred, the concentration is determined.

3,684,885

ROTATABLE X-RAY GRID WITH NON-STATIONARY CENTER AND METHOD

William A. Cook, 925 S. Curry Pike, Bloomington, Ind.

Filed July 27, 1970, Ser. No. 58,352
Int. Cl. G01n *23/20*
U.S. Cl. 250—62 **6 Claims**



A rotatable grid having a non-stationary center for allowing primary directed x-rays to pass through while preventing scattered secondary radiation from passing through the grid. A disc composed of aluminum or fiber strips interspaced with lead strips has an outer rim rotatably housed in a frame spaced over x-ray film. Compressed air is directed to strike recesses

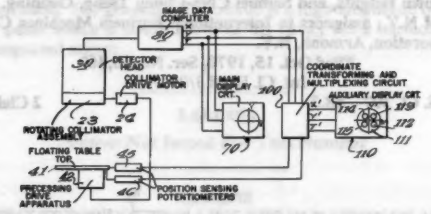
on the rim imparting rotation to the rim with respect to the frame. Four bearing assemblies, each having a roller adjustable from the rim edge and a roller supporting the bottom horizontal rim surface, are attached to the frame. A fastening device on each bearing assembly may be adjusted thereby changing the distance between the rim edge and the rim roller allowing the rotating disc center to move in a direction parallel with respect to the film surface.

3,684,886

TOMOGRAPHIC IMAGING DEVICE USING A ROTATING SLANTED MULTICHANNEL COLLIMATOR

Gerd Muehllegner, Glenview, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed April 13, 1970, Ser. No. 27,492
Int. Cl. G01t 1/20; G21f 5/04
U.S. Cl. 250—71.5 S **9 Claims**



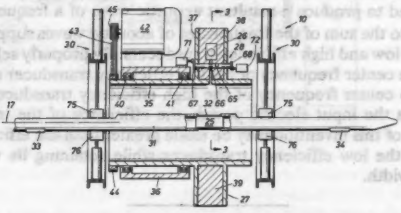
A stationary Anger-type radiation detector fitted with a rotating slanted multichannel collimator and a floating patient bed precessing in a synchronous manner with the rotation of the collimator produce tomographic images of the distribution of radionuclides throughout an object on the bed.

3,684,887

APPARATUS FOR INSPECTING TUBULAR GOODS HAVING AN AUTOMATIC SHUTTER

Gerald H. Hugonin, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed March 26, 1970, Ser. No. 22,933
Int. Cl. G01t 1/17
U.S. Cl. 250—83.3 D **11 Claims**



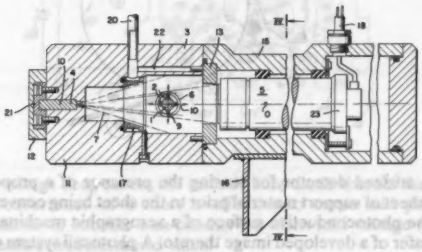
In the new and improved radiation apparatus disclosed herein for inspecting tubular goods, a radiation detector is coaxially positioned within a tubular member being axially translated along a selected inspection axis for receiving radiation from a radiation emitter facing the detector and mounted in a body rotating around the exterior of the tubular member. One or more radiation-attenuating devices or shutters are cooperatively arranged in the rotating body for regulating the intensity of radiation imposed on the detector. Uniquely-arranged controls are provided for selectively positioning the shutters as tubular members that are to be inspected move along the inspection axis, with these controls being adapted for operation without interrupting the rotation of the body carrying the shutters.

3,684,888

DEVICE FOR MEASURING THE CROSS-SECTION OF WIRE AND THE LIKE

Manfred Knuflemann, Leverkusen-Schlebusch, and Ingo Seidel, Cologn-Lindenthal, both of Germany, assignors to Gesellschaft fur Nuklearmerstechnik und Industrie-Elektronik M. Knufelmann & Co. mbH, Leverkusen-Schlebusch, Germany

Filed April 20, 1970, Ser. No. 30,193
Int. Cl. G01t 1/17; G01n 23/06
U.S. Cl. 250—83.3 D **4 Claims**



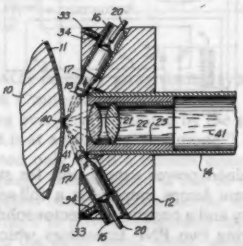
To ascertain the uniformity of the cross-section of a wire or other elongated object, a beam of soft radiation emitted by a radioactive isotope such as Am^{241} or Sr^{90} is focused upon the longitudinally moving object as a beam bracketing that object with allowance for dimensional tolerances and minor deviations from straight-line motion. The unabsorbed beam energy beyond the object is intercepted by a detector and gives rise to an output signal varying with changes in the mass of the object per unit length. The signal may be fed back to a rolling mill or other apparatus to compensate for cross-sectional changes of the object continuously issuing therefrom.

3,684,889

OPTICAL SYSTEM FOR FACSIMILE SCANNERS AND THE LIKE

Edmund F. Priessnetz, Baldwin, and Raymond Scott, Huntington, both of N.Y., assignors to Electronic Transmission Systems, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 754,773, Aug. 23, 1968, abandoned. This application Feb. 11, 1970, Ser. No. 10,416
Int. Cl. H01j 5/16
U.S. Cl. 250—216 **6 Claims**



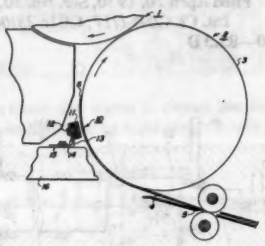
A simplified and effective optical system for facsimile scanners and the like wherein a plurality of prefocussed lamps illuminate the scanning spot and a coaxial lens system directs the reflected light through an aperture disposed in front of a photo-electric device for producing an electrical signal in response to changes in contrast of the scanning spot.

3,684,890

PHOTOSENSITIVE MISFEED DETECTOR

Thomas F. Hayne, and Charles A. Whited, both of Fairport, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,622
Int. Cl. G06m 7/00
U.S. Cl. 250—223 **9 Claims**



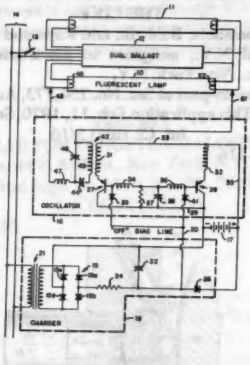
A misfeed detector for sensing the presence of a properly fed sheet of support material prior to the sheet being conveyed to the photoconductive surface of a xerographic machine for transfer of a developed image thereto. A photocell system utilizes two reflections from an area where both a sheet should be located and a gripper member is situated to determine whether a sheet is correctly positioned to be conveyed for an image transfer. If a misfeed of the sheet is detected by the photocells, a shutdown of the xerographic machine is effected.

3,684,891

FAIL-SAFE SOLID-STATE EMERGENCY LIGHTING POWER SUPPLY AND TRANSFER CIRCUIT

Richard L. Sieron, Old Saybrook, Conn., assignor to Dual-Lite Company, Newtown, Conn.

Filed Sept. 28, 1970, Ser. No. 75,815
Int. Cl. H02j 9/06
U.S. Cl. 307—66 **3 Claims**



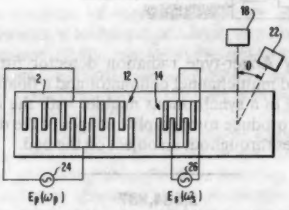
A self contained power supply unit for standard "rapid-start" fluorescent lamps employing a full-wave rectifier to charge a battery and a common-collector solid state oscillator circuit employing two PNP transistors which are normally biased to their non-oscillating mode by the charging potential from the full-wave rectifier. The oscillator output is delivered directly to a pair of clamp-on leads respectively anchored to the terminals of a standard "rapid-start" fluorescent lamp in parallel with the lamp's normal ballast circuit. The clamp-on leads are connected by only two wires to the oscillator output circuit. The oscillator transistors are normally biased in their non-oscillating mode, and the only power consumed by the circuit is the power required for continuous battery charging, the charging current being drawn through a current-limiting resistor and a diode. In the event of main power line failure, the battery continues to supply the normal DC potential to drive the amplifier, but the biasing potential dervied from the full-wave rectifier is no longer present and the oscillator transistors are therefore no longer biased in their non-oscillating mode. Powered by the emergency battery, the oscillator produces high frequency sinusoidal output current which is delivered through the clamp-on leads directly to the terminals of the fluorescent lamp during main power line failure. When main line power is restored, the full-wave rectifier charging potential is again delivered to bias the oscillator transistors to their non-oscillating mode, automatically returning the emergency power supply unit to its battery charging mode.

3,684,892

HIGH GAIN WIDE BAND ACOUSTIC SURFACE WAVE TRANSDUCERS USING PARAMETRIC UPCONVERSION

Eric Gung Hwa Lean, Mahopac; Robert Valdimir Pole, Yorktown Heights, and Samuel Chin-Chong Tseng, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,860
Int. Cl. H03f 3/04, 7/00
U.S. Cl. 307—88.3 **2 Claims**



Parametric upconverter acoustic surface wave transducer exhibiting high efficiency with wide band operation. The transducer consists of a combination of two constituent transducers, one a narrow bandwidth, high efficiency transducer and the other a wide bandwidth, low efficiency transducer, coupled to produce a resultant acoustic wave of a frequency equal to the sum of the frequencies of acoustic waves supplied by the low and high efficiency transducers. By properly selecting the center frequency of the low efficiency transducer relative to center frequency of the high efficiency transducer as well as the input electric power, the efficiency of the transducer of this invention may be made greater than the efficiency of the low efficiency transducer while retaining its wide bandwidth.

ERRATUM

For Class 307—66 see:
Patent No. 3,684,891

3,684,893

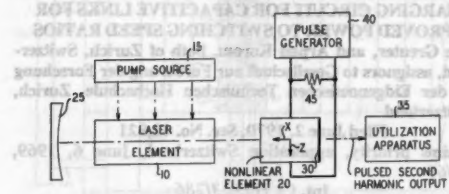
PULSED LASER ARRANGEMENT

Ronald Benjamin Chesler, Summit, and Joseph Edward Geusic, both of Berekely Heights, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed April 12, 1971, Ser. No. 133,210
Int. Cl. H02m 5/06
U.S. Cl. 307—88.3 **6 Claims**

A pulsed second harmonic output is obtained from a continuously pumped laser at repetition rates in the 1–10 MHz

range. This is accomplished by electrically pulsing an intracavity nonlinear element to establish momentarily the phase-matched condition required for second harmonic



generation. The generated harmonic is a high-amplitude optical pulse which is coupled out of the cavity via a harmonic-transparent mirror.

3,684,894

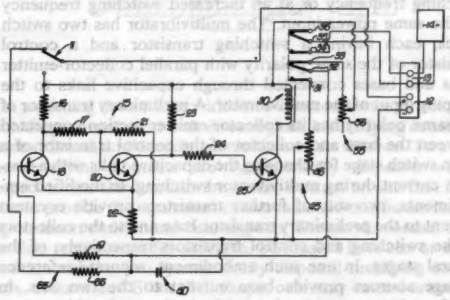
Patent Not Issued For This Number

3,684,895

CIRCUIT FOR CONTROLLING THE DURATION OF AN INTERVAL BETWEEN SOUND SIGNALS

Andrew C. Edelson, 10832 Charnock Rd., Los Angeles, Calif.

Filed Feb. 19, 1971, Ser. No. 117,005
Int. Cl. H01h *47/18*
U.S. Cl. 307—132 E **3 Claims**



A circuit for controlling the duration of, and interval between, successive signals for operating, for example, a fog horn and in which the duration and interval may be manually preselected in accordance with prevailing weather conditions and navigation rules.

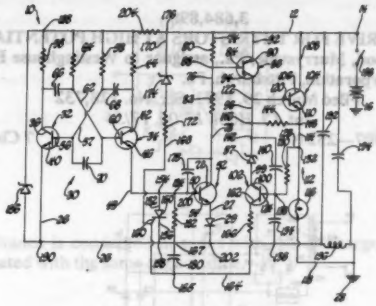
3,684,896

FLASHER CIRCUIT WITH SHORT PROTECTION

John F. Bolinger, Michigan City, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.

Filed Aug. 26, 1970, Ser. No. 67,023
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **7 Claims**

A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timed pulse signal applied to the power transistor for turning the power transistor "on;" and additional voltage sensing means operatively coupled to the load or power transistor and sensitive to



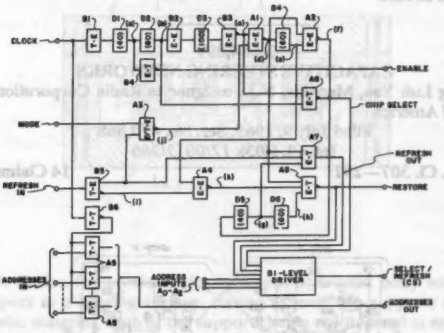
the voltage drop across the emitter base diode thereof due to the occurrence of a short is effective to cause said power transistor to become non-conductive when said voltage drop exceeds a predetermined value.

3,684,897

DYNAMIC MOS MEMORY ARRAY TIMING SYSTEM

Stanley R. Anderson, Hopewell Junction; Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, all of N.Y., assignors to Cogar Corporation, Wappinger Falls, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,225
Int. Cl. H03k *19/08*
U.S. Cl. 307—208 **11 Claims**



A dynamic MOS memory array timing system. If a mode signal is at a first ("automatic mode") level, a refresh pulse is generated during every cycle defined by the system clock; if the mode signal is at a second ("fast mode") level, a refresh pulse is generated only when a refresh input to the timing system is energized. Where speed is not of the utmost importance, the system can be operated in the automatic mode and there is no need to provide externally controlled refresh input signals. On the other hand, where speed is important, each system cycle can be speeded up by generating refresh signals only periodically; the increased speed is gained at the expense of the additional control circuits required to generate the refresh input signals. Thus the same timing system can be used in many different applications. The timing system utilizes delay elements for generating the many pulses necessary during each cycle. The delay elements are tapped so that fewer separate elements are required. To prevent loading of the delay elements, high-input impedance ECL circuits are used

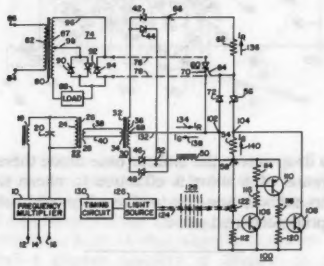
in the timing system. However, to make the system compatible with TTL inputs and outputs, various TTL-ECL and ECL-TTL converter circuits are used throughout the system.

3,684,898

GATE DRIVE FOR THYRISTORS AT HIGH POTENTIALS

Peter Wood, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 29, 1971, Ser. No. 128,732
Int. Cl. H03k 17/00, 17/56
U.S. Cl. 307—252 N 7 Claims



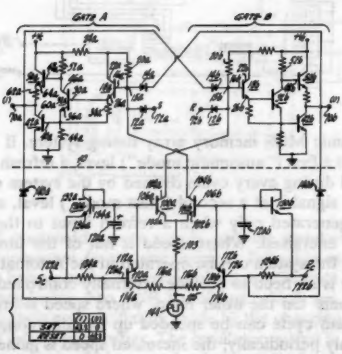
A drive circuit for gating controllable rectifiers. Two channels are used, one for the transfer of the energy for the gate signal and its associated switching components, the other for the transfer of the timing sequence information to control the gate drive circuit. The energy channel uses current transformers operating back-to-back to transfer the energy to the gate drive circuit. The control channel employs a photosensitive diode which is irradiated by a light source to control the gate drive circuit.

3,684,899

CAPACITIVE STEERING NETWORKS

Ying Luh Yao, Manville, N.J., assignor to Radio Corporation of America

Filed July 9, 1965, Ser. No. 470,868
Int. Cl. H03k 17/00, 3/286
U.S. Cl. 307—291 14 Claims



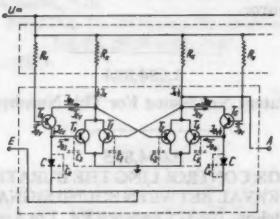
A steering network employing first and second clock switching transistors having their emitters connected in common to a clock pulse source with first and second capacitors each connected between a different base electrode and a point of reference potential is described. In addition, clock signal responsive means provides charge paths for the capacitors under the selective control of input signal responsive means.

3,684,900

BISTABLE MULTIVIBRATOR INCLUDING SPECIAL CHARGING CIRCUIT FOR CAPACITIVE LINKS FOR IMPROVED POWER TO SWITCHING SPEED RATIOS

Andre Greuter, and Arpad Korom, both of Zurich, Switzerland, assignors to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

Filed June 2, 1970, Ser. No. 42,821
Claims priority, application Switzerland, June 6, 1969, 8633/69
Int. Cl. H03k 3/286
U.S. Cl. 307—292 15 Claims



An electronic circuit arrangement having at least one bistable multivibrator, particularly improved for use in integrated switching circuits at reduced power input for the same switching frequency or at an increased switching frequency for the same power input. The multivibrator has two switch stages, each having a switching transistor and a control transistor of the same polarity with parallel collector-emitter paths and bases connected through capacitive links to the stepping input of the multivibrator. A preliminary transistor of the same polarity has its collector-emitter section connected between the base and collector of the control transistor of a given switch stage for charging the capacitive links with a constant current during multivibrator switching. In modified embodiments, two sets of further transistors provide constant current to the preliminary transistor base and to the collectors of the switching and control transistors respectively, of the several stages. In one such embodiment, separate reference voltage sources provide base current to the two sets. In another, the same source is used for both sets. In still another, the same source is used for both sets, but indirectly as to one set. In a further modification, a plurality of multivibrators are connected in a counter chain, the reference voltage sources of which are energized by a further circuit having a plurality of constant current sources.

3,684,901

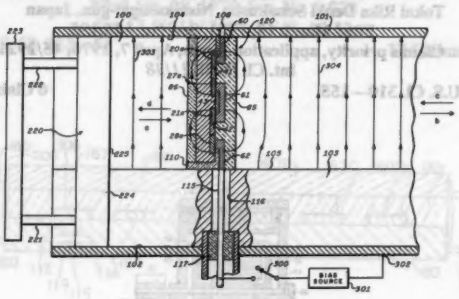
HIGH FREQUENCY DIODE ENERGY TRANSDUCER AND METHOD OF MANUFACTURE

Harry Kroger, Sudbury, Mass., assignor to Sperry Rand Corporation

Filed May 15, 1970, Ser. No. 37,638
Int. Cl. H01l 9/06
U.S. Cl. 307—299 3 Claims

A miniature microwave or high frequency amplifier or oscillator diode array is disclosed in the form of a semiconductor microcircuit array of surface diodes with interconnections ar-

ranged for efficient distribution of bias and oscillating high frequency fields to the active diode elements for provoking



high efficiency exchange of energy therein between the oscillating microwave or high frequency field and an electrical power source.

3,684,902

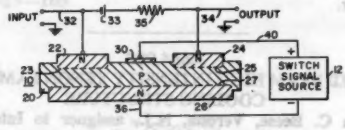
SEMICONDUCTOR SWITCH DEVICE

Michael N. Giuliano, Baltimore, Md., and Elwood W. Goins, Fishkill, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 176,723, March 1, 1962, abandoned. This application June 7, 1966, Ser. No. 555,795

Int. Cl. H01l 9/00

U.S. Cl. 307—303 2 Claims



A switching device is provided in a semiconductor structure including a first region with three regions in rectifying contact therewith and, additionally, an ohmic contact thereon. Two of the rectifying contacts are symmetrically disposed with respect to the third and to the ohmic contact on the first region to provide the equivalent of two matched transistors having common emitter and base regions. The ohmic contact on the first region may, for example, be located between or extend around the two symmetrically disposed rectifying contacts, or have an "E" or "H" shape, or it may extend around the third rectifying contact. When a switching signal is applied across the ohmic contact on the first region and the third rectifying contact a low impedance path is provided between the other two rectifying contacts.

3,684,903

DYNAMIC CIRCUIT ARRANGEMENTS

Tegze Haraszti, Rollwagstr. 4, 71 Heilbronn, Germany

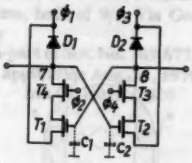
Filed July 21, 1970, Ser. No. 56,842

Claims priority, application Germany, July 29, 1969, P 19 38 468.0

Int. Cl. H03k 19/08

U.S. Cl. 307—304 16 Claims

A dynamic circuit arrangement which is operable by clock pulses, particularly a storage element or a shift register stage, and which comprises at least two capacitances, each capacitance having a charging circuit comprising a diode and a discharge circuit comprising two insulated gate or MOS field effect transistor whose controllable current paths are connected in series, in which the charging circuit of each



capacitance is connected in series with the discharge circuit associated with the same capacitance.

3,684,904

DEVICE FOR PRECISION DISPLACEMENT OF A SOLID BODY

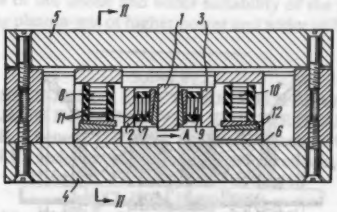
Gennady Vasilievich Galutva, Leninsky raion, poselok Mosrentgen, 6, kv. 11; Alek Iosifovich Ryazantsev, Leninsky raion, poselok Mosrentgen, 8a, kv. 28, both of Moskovskaya oblast; Gennady Stepanovich Presnyakov, Belyaevo-Bogorodskoe, kvartal 46-47, korpus 54, kv. 62, and Jury Konstantinovich Modestov, ulitsa Tolbukhina, 5, korpus 1, kv. 73, both of Moscow, all of U.S.S.R.

Filed April 15, 1970, Ser. No. 28,746

Claims priority, application U.S.S.R., April 24, 1969, 1324051

Int. Cl. H01v 7/00

U.S. Cl. 310—8.0 3 Claims



A device for precision displacement of a solid body with respect to a bearing surface, having at least two supports of elastic material, each of the supports being rigidly fixed at one end thereof to the displaceable solid body, and at least two drive means for ensuring independent movement of the ends of each support both in the direction perpendicular to the bearing surface, and in the direction of movement of the solid body.

3,684,905

PIEZOELECTRIC CRYSTAL DEVICE INCLUDING LOADING ELEMENTS HAVING THE SHAPE OF CHORDAL SECTIONS

Lloyd G. Martyn, Mt. Holly Springs, Pa., assignor to McCoy Electronics Company, Mount Holly Springs, Pa.

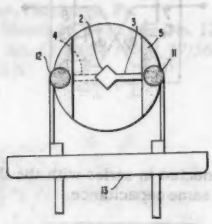
Filed April 15, 1971, Ser. No. 134,292

Int. Cl. H01v 7/00

U.S. Cl. 310—8.2 11 Claims

A piezoelectric crystal device employing a novel electrode/loading element configuration for the suppression of spurious modes of oscillation. A substantially diamond-shaped electrode is disposed at the center of each face of the crystal

device and a pair of loading elements, each loading element having the shape of a chordal section of a circle, are disposed on the edges of each face. A metallic tab extends from each electrode to one loading element on each face and the elec-



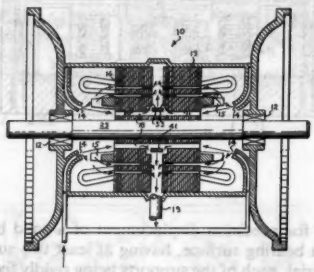
trode and loading elements are positioned so that a line running through and bisecting one of the angular corners of the diamond-shaped electrode is perpendicular to the chordal edges of the loading elements.

3,684,906

CASTABLE ROTOR HAVING RADIALLY VENTING LAMINATIONS

Henry George Lenz, Scotia, N.Y., assignor to General Electric Company

Filed March 26, 1971, Ser. No. 128,393
Int. Cl. H02k *9/06*
U.S. Cl. 310—61 **11 Claims**



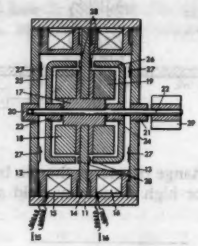
A rotor is described having ventilating laminations of a configuration permitting casting of the rotor conductors without blocking radially venting passages in the rotor. To effect this result, the triple cage conductor slot configuration of the main rotor laminations is altered in the venting laminations to a coffin shaped slot of equal area thereby providing a greater span between conductor slots for venting slots extending radially between, and separated from, the coffin shaped conductor slots. A kidney shaped manifold serves to communicate the venting slots with circular refrigerant passageways extending laterally through the rotor while a second group of ventilating laminations having radially disposed venting slots partially overlapping the venting slots of the first ventilating laminations permits radial discharge of refrigerant into the rotor air gap.

3,684,907

ELECTRIC MOTOR

Matatoyo Hinachi, Aichi Prefecture, and Toyoshi Mori, Gifu Prefecture, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Japan

Filed March 19, 1971, Ser. No. 126,195
Claims priority, application Japan, April 7, 1970, 45/29216
Int. Cl. H02k *21/38*
U.S. Cl. 310—155 **6 Claims**



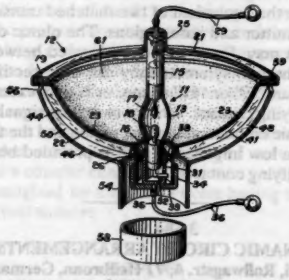
An improved electric motor comprising a permanent magnet stator, a rotor having pole teeth, a yoke adapted to form a magnetic circuit to provide alternating magnetic flux to the rotor, salient poles on yoke facing the respective pole teeth, and an exciting coil interlinking with the magnetic circuit formed by the pole teeth and yokes, and capable of varying a magnetic resistance between said pole teeth and said salient poles according to the rotation angle of the rotor to give a torque to the rotor.

3,684,908

SEALED BEAM HIGH INTENSITY XENON LAMP WITH COOLING STRUCTURE

Norman C. Beese, Verona, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 25, 1970, Ser. No. 75,590
Int. Cl. H01j *61/52*
U.S. Cl. 313—24 **11 Claims**

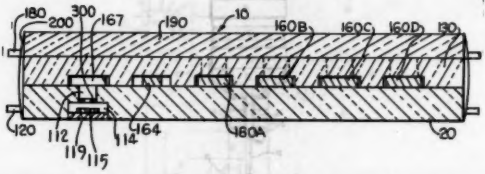


A short arc high intensity xenon lamp is enclosed within a sealed housing made of a light transmissive lens and a parabolic reflector shell. The parabolic shell has a plurality of external air ducts through which air is forced to cool the heated lamp. The air cooled metallic reflector shell permits an increase in efficiency, light intensity and life of the lamp.

3,684,909
DISPLAY PANEL HAVING PARTICLE SOURCE

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 29, 1970, Ser. No. 6,828
Int. Cl. H01j 17/16, 17/18, 17/32
U.S. Cl. 313—54 17 Claims

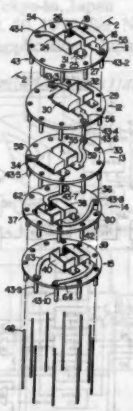


A gas-filled display panel includes a plurality of rows and columns of display cells and associated electrodes. The panel also includes a trigger means, known as a keep-alive cell, to facilitate the turn-on of the display cells. The keep-alive cell is heat-sensitive, and it is secured in the panel by techniques which operate at room temperature.

3,684,910
ELECTRON MULTIPLIER HAVING DYNODE MODULES

Guy R. Stutzman, Huntington, and Allan J. Comstock, Fort Wayne, both of Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 18, 1970, Ser. No. 38,092
Int. Cl. H01j 43/00, 43/06, 43/10
U.S. Cl. 313—105 8 Claims

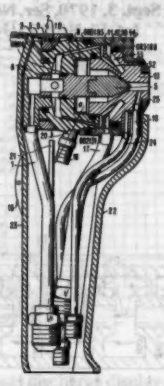


An electron multiplier construction formed of a plurality of dynode modules. Each module is formed of a a ceramic wafer having two complementary, metal dynode elements attached thereto arranged to direct a stream of electrons through an opening in the wafer and into a dynode element of the next successive module. The modules are secured together in spaced, parallel relationship by metal post elements spaced-apart around the periphery of the wafers, each dynode element being connected to a different one of the post elements.

3,684,911
PLASMA-JET GENERATOR FOR VERSATILE APPLICATIONS

Giancarlo Perugini, 11, Via G. Leopardi, Merano (Bolzano); Giorgio Marcato, 33, Via Druso, Bolzano; Luigi Belotti, and Carmelo Caccamo, both of 9/A Via Goethe, Merano (Bolzano), all of Italy

Continuation-in-part of Ser. No. 709,677, March 1, 1968, abandoned. This application Aug. 25, 1970, Ser. No. 66,852
Int. Cl. H01d 17/26
U.S. Cl. 313—231 19 Claims

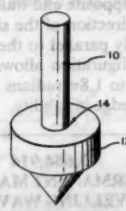


Improvement of the plasma-jet generator described in U.S. Pat. No. 3,390,292 to Perugini, by improving the water cooled anodic surface, and an anode adapter using an interchangeable set of electrodes forming and stabilizing the plasma-jets. This provided higher cooling efficiency and higher operative resistance of the anode and wider suitability of the generator in forming plasma-jets of higher power and wider utility.

3,684,912
TUNGSTEN-ALLOY ELECTRODE WITH BRAZABLE LEADS INTEGRAL WITH EMITTER HEAD

Richard F. Cheney, Towanda, Pa., and Nicholas W. Rench, Troy, N.Y., assignors to Sylvania Electric Products, Inc.

Filed Oct. 22, 1970, Ser. No. 83,197
Int. Cl. H01j 19/06, 5/50
U.S. Cl. 313—346 R 5 Claims



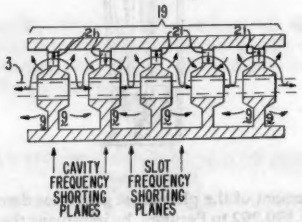
An emitter type electrode comprising a head consisting essentially of a moldable emissive electrode material, tungsten, and from about 0.2 to about 7 percent of a group VIII metal additive that lowers the sintering temperature of tungsten at least about 100° C and integral with said head and extending therefrom, an electrically conductive tungsten alloy lead consisting essentially of tungsten and from about 1 to about 30 percent rhenium. In the process for preparing emitter-type electrodes having an integral head and lead by molding, pressing and sintering the improvement comprising adding to the moldable, emissive electrode material and tungsten, that forms the head, prior to pressing and sintering, from about 0.2

to about 7 percent of a group VIII metal additive and inserting into the head prior to pressing and sintering a tungsten alloy lead consisting essentially of tungsten and from about 1 percent by weight to about 30 percent of rhenium.

3,684,913
COUPLED CAVITY SLOW WAVE CIRCUIT FOR MICROWAVE TUBES

Bertram G. James, Redwood City; Ward A. Harman, Los Altos Hills, and John A. Ruetz, Los Altos, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Sept. 3, 1970, Ser. No. 69,198
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **6 Claims**



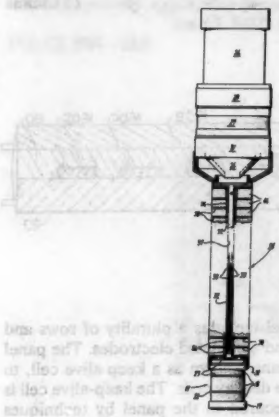
A coupled cavity slow wave circuit and microwave tube using same are disclosed. The coupled cavity slow wave circuit includes an array of cavity resonators coupled together via the intermediary of an array of slots communicating through the common walls of adjacent resonators. The slots are dimensioned to have a resonance frequency substantially at the upper band edge frequency of the cavity passband mode such that the higher frequency passband of the slot mode is coalesced with the lower passband of the cavity mode. The coupling slots are arranged in an array such that the centers of the coupling slots in opposite end walls of the coupled cavities are aligned in axial direction of the slow wave circuit along a line which is generally parallel to the axis of the same beam. This in-line slot configuration allows higher interaction impedance in the 1.5π to 1.8π radians of phase shift per cavity period without band edge instability.

3,684,914
PERIODIC PERMANENT MAGNET FOCUSED TRAVELLING WAVE TUBE

Merton V. Purnell, Los Altos, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed March 30, 1971, Ser. No. 120,466
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **13 Claims**

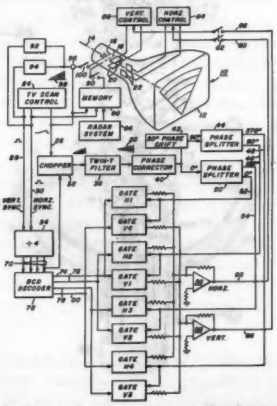
A travelling wave tube including an envelope, an electron source for projecting an electron beam along a predetermined path in said envelope, a collector spaced from said source for intercepting and collecting electrons in the beam, a helical conductor disposed within said envelope along the path of said beam for supporting and projecting an electromagnetic wave in coupled relationship to the beam for interaction therewith, a periodic permanent magnet focusing assembly having a succession of alternate high thermal conductivity conducting bars and magnetic plates having aligned apertures to define an envelope portion which accommodates the helix support assembly and helix and a plurality of magnet bars disposed between plates to form a succession of longitudinal magnetic fields in coupled relationship with the beam to focus the same as it travels along the envelope portion.



3,684,915
RECTANGULAR TO POLAR DISPLAY CONVERTER

Lloyd B. Gangawere, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1970, Ser. No. 46,379
Int. Cl. H01j *29/70*
U.S. Cl. 315—23 **3 Claims**

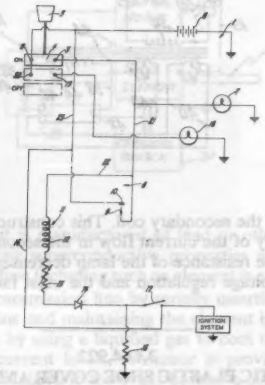


Apparatus for converting a display for a CRT tube from rectangular coordinates to polar coordinates for radar and the like applications whereby the same CRT tube can be used to display television pictures or to produce a sector-scan PPI radar display while utilizing all elements of a scan converter memory in producing the PPI display.

3,684,916
HEADLAMP TURN OFF TIME DELAY

Kenneth R. Skinner, Bloomington, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 12, 1970, Ser. No. 2,309
Int. Cl. B60q 1/08
U.S. Cl. 356—82 1 Claim

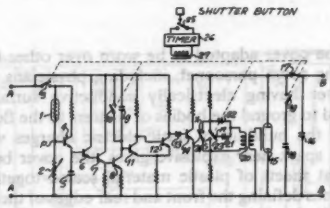


A time delay system for turning off vehicle headlamps when the vehicle ignition switch is off and the headlight switch is moved from the "on" position to the "off" position including a holding relay and a thermistor in circuit to delay the turning off of the lamps for a period of from 30 to 40 seconds.

3,684,917
PHOTO FLASH INTENSITY CONTROL WITH PREPARATORY FLASH CONTROLLING PARTIAL DISCHARGE OF MAIN CAPACITOR

Naoyuki Uno, Oi-machi, Iruma-gun, and Seijiro Tokutomi, Fujisawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 10, 1970, Ser. No. 71,115
Claims priority, application Japan, Sept. 22, 1969, 44/75482
Int. Cl. H05b 41/40
U.S. Cl. 315—151 6 Claims

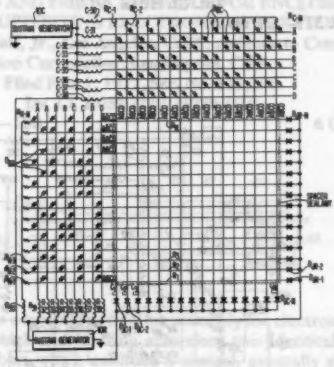


A system for automatically controlling flash illumination of a camera so as to achieve a proper exposure. The flash tube of the camera is energized from a capacitor which initially has a predetermined charge. Prior to energizing of the camera flash with this capacitor, a discharge circuit is connected to the capacitor for preliminarily discharging the capacitor to an extent determined by the photographing conditions. After this initial discharge, the charge remaining at the capacitor will also correspond to the photographing conditions, and it is this remaining charge which is then used for energizing the flash tube in connection with exposure of film in the camera.

3,684,918
GAS DISCHARGE DISPLAY/MEMORY PANELS AND SELECTION AND ADDRESSING CIRCUITS THEREFOR

Larry J. Schmersal, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Aug. 7, 1970, Ser. No. 62,015
Int. Cl. H05b 37/00
U.S. Cl. 315—169 R 8 Claims

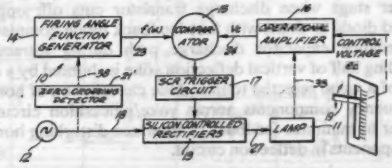


There is disclosed a gas discharge display and memory panel having parallel row and parallel column conductor arrays carried on support plates in which both ends of the conductors in the arrays are connected to selection and addressing circuitry so that, in effect, the conductors are made a part of the selection and addressing circuitry. In one embodiment, a dielectric coating on the conductors in the active area of the panel is extended a distance beyond the spacer sealant for the gas chamber and holes are formed in a pattern in the dielectric, which holes contain circuit components as, for example, resistance elements and/or diodes. In another embodiment, various integrated circuit packages, such as LIDS, MSI, and LSI packages, are secured to the conductor ends, respectively.

3,684,919
DIMMER CIRCUIT

Mert Cramer, Los Angeles, Calif., assignor to Berkey/Colortran Mfg., Inc., Burbank, Calif.

Filed Dec. 10, 1970, Ser. No. 96,852
Int. Cl. H05b 37/02, 39/04
U.S. Cl. 315—194 11 Claims



A dimmer circuit for controlling the light intensity from a lamp by adjusting the firing angle of a silicon controlled rectifier (SCR) or like control element supplying ac power to the lamp. The circuit comprises a firing angle function generator which produces, in sync with each ac half cycle, a signal $f(\alpha)$ monotonically related in amplitude to SCR firing angle. Comparator circuitry triggers the SCR's when the signal $f(\alpha)$ crosses the level of a light intensity control signal linearly related e.g., to dimmer control handle position. In one embodi-

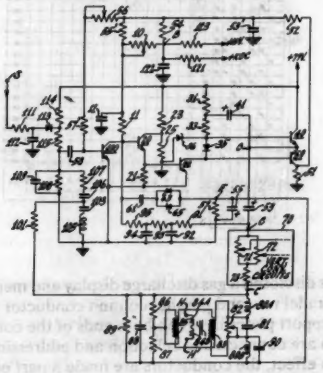
ment, the function generator includes a capacitor charged at preselected rates during portions of each ac half cycle. The firing angle function thereby synthesized is programmable to implement any desired dimmer response.

3,684,920

TRANSISTORIZED VERTICAL DEFLECTION CIRCUIT

Lawrence Edward Smith, Indianapolis, Ind., assignor to RCA Corporation

Filed May 15, 1970, Ser. No. 37,668
Int. Cl. H01k 29/70
U.S. Cl. 315—27 TD 6 Claims



Transistorized vertical deflection circuit employs output stage of class B, push-pull, complementary symmetry configuration. Miller integration approach is used for sawtooth wave generation, with feedback waveform derived from yoke current sampling resistor. Diode, coupled between ground and base of the (NPN) output transistor which conducts during retrace and first half of scan, operates in Zener region during retrace to hold voltage at joined emitters of output pair at s substantially constant voltage during retrace; output waveform is thereby stabilized against effects of B+ changes due to line voltage variations or loading extremes, and remaining (PNP) output transistor dissipation is held substantially constant in the face of such changes. Diode in feedback path, forward biased when retrace ends, ensures rapid turn-on of driver stage when discharge transistor cuts off; oppositely poled diode in shunt with first feedback diode completes low impedance capacitor discharge path during retrace. One winding half of vertical deflection yoke is shunted by a capacitor of a value selected to introduce cancellation of horizontal frequency components across yoke/pincushion circuitry, in order to minimize feedback of interlace-disturbing horizontal components in deflection circuit.

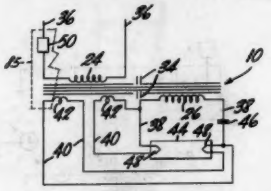
3,684,921

ILLUMINATING APPARATUS AND BALLAST CIRCUIT

Luis F. De Leon, 1012 J. Escoda Llanes, Manila, Philippines

Filed Aug. 31, 1970, Ser. No. 68,171
Int. Cl. H05b 41/16
U.S. Cl. 315—276 10 Claims

One or more gaseous discharge lamps which have a negative resistance characteristic are connected to a ballast circuit which includes a transformer having primary and secondary coils and a core having a portion of reduced cross-sectional area. The core also includes a high-reluctance shunt which is arranged to cooperate with the portion of reduced cross-sectional area to provide a path for a portion of the magnetic flux linking the windings of the primary coil that does not link the



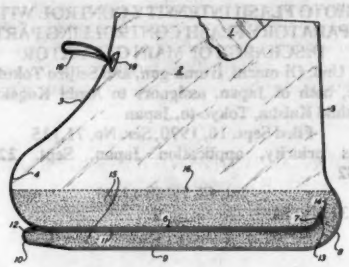
windings of the secondary coil. This construction diminishes the tendency of the current flow in the secondary coil to increase as the resistance of the lamp decreases. In addition, it improves voltage regulation and the crest factor of the current.

3,684,922

ANTI-STATIC PLASTIC SHOE COVER AND METHOD OF MAKING SAME

Richard E. Ericson, Keene, N.H., assignor to Elliot Laboratories, Inc., Fitzwilliam, N.H.

Filed Aug. 2, 1971, Ser. No. 168,256
Int. Cl. A61n 1/14
U.S. Cl. 317—2 B 7 Claims

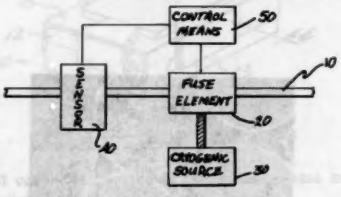


A shoe cover adapted to be worn over other footwear by operating room personnel, including physicians and nurses, the cover having electrically conductive surface portions disposed to ground the bodies of wearers to the floor and thus prevent the build-up of static-electric charges which might cause a spark near explosive gases, the cover being formed from flat sheets of plastic material sealed together and cut along lines defining the front and rear edges of the cover and a bottom line defining one edge of an integral connecting strip, and being also sealed and scored (weakened) along a line parallel to said bottom line which defines the lower edge of the shoe cover and the upper edge of the connecting strip, said strip and an adjacent portion of the cover being rendered conductive by the application thereto of a conductive surface coating. The double sealed and scored line stops short of the rear edge and the cover is prepared for use by tearing strip along the scored line to the end thereof, whereby the strip is available to be tucked into the heel of the wearer's shoe to provide a continuous conductive path from the foot, along the surface of the strip to the adjacent conductive surface area of the cover and thence to the floor.

3,684,923
CRYOGENIC FUSE

Miner S. Keeler, II, 2525 Indian Trail S.E., Grand Rapids, Mich.

Filed Aug. 18, 1971, Ser. No. 172,714
Int. Cl. H02h 3/08
U.S. Cl. 317—13 D 19 Claims

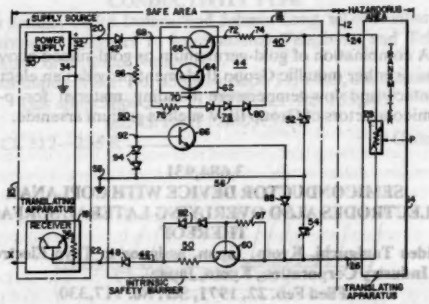


A fuse element is manufactured of lead or other suitable material displaying superconductive properties at very low temperatures. A fuse including such an element is employed in a high voltage transmission line by serially inserting the fuse element in the line and maintaining the element in its superconductive state by using a liquified gas to cool the element during normal current levels. A sensor is provided which develops a control signal in the event excessive current levels are reached. The control signal is applied to control means which automatically vents the fuse by allowing the coolant to escape and thereby raises the temperature of the fuse such that its normal resistivity returns. The resulting I^2R heat developed within the element due to the current flow therein will cause the element to immediately vaporize thereby opening the circuit. In other embodiments the control signal can be employed to provide power to a heating element mounted in thermal proximity with the fuse element to increase its temperature in the event of excessive current. Also the control signal can be employed to cause a magnetic field to be developed which causes the fuse to return to its normal resistivity. The fuse and its related circuitry can be designed to provide either a fast-blow or a slow-blow operating fuse.

3,684,924
ELECTRICAL SYSTEM WITH ENERGY BARRIER

Edward J. Miller, Jr., Tempe, Ariz., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,355
Int. Cl. H02h 3/14, 9/00
U.S. Cl. 317—18 B 15 Claims

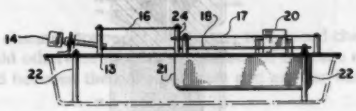


An electrical system wherein an intrinsic safety barrier between electrical field apparatus and a DC supply source therefor includes voltage threshold devices connected from both lines at the field end to ground to protect against excess voltages, and current limiters in both lines between the source and field ends for preventing current above a predetermined value from flowing in the lines regardless of voltage or loading values. The current limiter in one line includes an electric valve in series in the line, which valve is turned OFF in response to loss of the aforementioned ground connection. Diodes in both lines oppose wrong polarity voltages that might be applied thereto.

3,684,925
HOUSING AND FRAME ASSEMBLY FOR ENCLOSING AND SUPPORTING ELECTRONIC APPARATUS

Fredric L. Naff, Jr., Los Angeles, Calif., assignor to Computer Transmission Corporation, Los Angeles, Calif.

Filed Feb. 1, 1971, Ser. No. 111,290
Int. Cl. H05k 7/20; H02b 1/10
U.S. Cl. 317—100 6 Claims

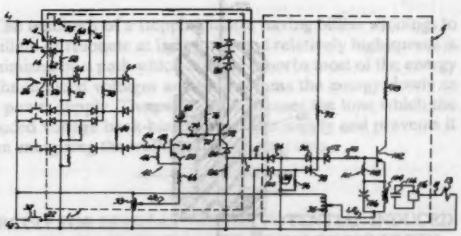


Disclosed is a housing and frame assembly for electronic apparatus in which the housing comprises two identical pan-shaped members which embrace a central, generally planar, structural support member. The two substantially identical cover members are arranged for either permanent or snap fitting engagement with the planar frame member whereby virtually instantaneous access to the electronic interior is available by snap removal. When assembled complete, the frame member and electronic assembly are virtually suspended with the sandwich-like structure for shock protection. When removed from the cover and base, the frame member is self-supporting whereby the electronic assembly may be manufactured or maintenance work may be performed to all sides of the electronic assembly without interference from its enclosure.

3,684,926
ALTERNATING CURRENT STATIC CONTROL SYSTEM

William C. Kosco, Southfield, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.

Filed July 26, 1971, Ser. No. 166,056
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 R 10 Claims



An alternating current solid state control system utilizing alternating current AND and OR alternating current solid state control logic elements. The alternating current logic elements perform their logic functions by comparing the voltage drop across a resistor to a predetermined reference voltage, the voltage drop being caused by the logical input state of the logic element. Each element's output can be used as a feedback to its own inputs or can be connected to the inputs of electrically similar circuits. By the use of multiple logical inputs, various feedback connections, and various combinations

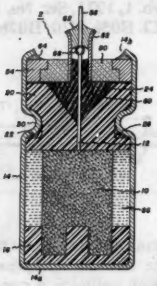
of the alternating current logic elements complex logic functions can be generated to control mechanical apparatus.

3,684,927

ELECTROLYTIC CAPACITOR WITH IMPROVED SEAL

Edward M. Correll, West Columbia, S.C., assignor to General Electric Company

Filed July 12, 1971, Ser. No. 161,841
Int. Cl. H01g 9/10
U.S. Cl. 317—230 **3 Claims**



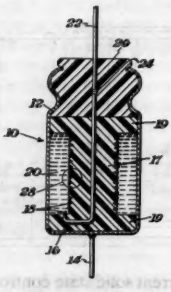
An electrolytic capacitor is provided with improved sealing means comprising an adhesive seal between the primary, elastomeric seal and the secondary, hermetic glass-to-metal seal to prevent reaction between the electrolyte and exposed metallic portions adjacent the glass-to-metal seal.

3,684,928

ELECTROLYTIC CELL WITH IN-SITU CHARGING ELECTROLYTE

Richard J. Roethlein, Bennington, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed June 4, 1971, Ser. No. 149,984
Int. Cl. H01g 9/02
U.S. Cl. 317—230 **7 Claims**



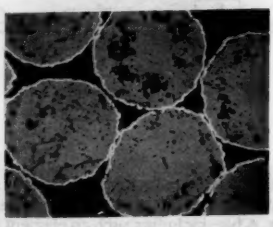
A silver coulometer using a standard phosphoric acid — silver phosphate electrolyte has a metaphosphate added thereto to permit the in situ charging of the coulometer. The resultant silver deposit is smooth, bright, adherent, economic and more accurate than prior art deposits for silver coulometers.

3,684,929

ELECTROLYTIC CAPACITOR ANODE COMPRISING OXIDE FILMED HOLLOW BODIES

Robert F. Leifield, Erie, Pa., assignor to Mallinckrodth Chemical Works, St. Louis, Mo.

Filed July 31, 1969, Ser. No. 846,550
Int. Cl. H01g 9/05
U.S. Cl. 317—230 **4 Claims**



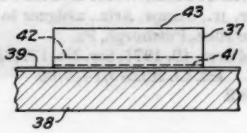
An anode for an electrolytic capacitor is fabricated by forming an electrically integral porous mass of particles which have cores with a discontinuous coating of a valve metal thereon and the coating has an exposed outer surface. At least a substantial portion of the inner surface of the valve metal coating is exposed to increase the exposed surface area of the valve metal in the mass. The exposed valve metal surfaces are then anodized.

3,684,930

OHMIC CONTACT FOR GROUP III-V P-TYPES SEMICONDUCTORS

Neil E. Collins, Richmond Heights, and Ira E. Halt, Chesterland, both of Ohio, assignors to General Electric Company

Filed Dec. 28, 1970, Ser. No. 101,971
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R **16 Claims**



A combination of gold-germanium or gold-silicon alloy and zinc or other metallic Group II element provides an electrical contact and low-temperature bonding material for p-type semiconductors of Group III-V such as gallium arsenide.

3,684,931

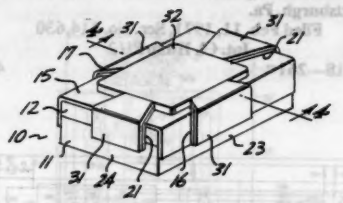
SEMICONDUCTOR DEVICE WITH COPLANAR ELECTRODES ALSO OVERLYING LATERAL SURFACES THEREOF

Hideo Taniguchi, Kyoto, Japan, assignor to Toyo Electronics Industry Corporation, Kyoto, Japan

Filed Feb. 22, 1971, Ser. No. 117,330
Claims priority, application Japan, Feb. 26, 1970, 45/16823; Feb. 28, 1970, 45/17271
Int. Cl. H01l 5/02
U.S. Cl. 317—234 **4 Claims**

An active device pellet comprising a body including a semiconductor base, at least one diffused layer formed on the

surface of the body, an electrode formed on said body surface in contact with the diffused layer, and a second electrode having one end connected to the semiconductor base and the other end extending to the surface of said body.

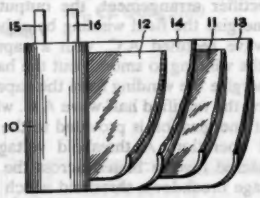


3,684,932

ELECTRICAL CAPACITORS WITH AMIDE IMPREGNANTS

Sidney D. Ross, Williamstown, and Manuel Finkelstein, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Nov. 4, 1971, Ser. No. 195,780
Int. Cl. H01g 3/195
U.S. Cl. 317—258 10 Claims



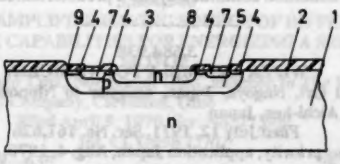
Mono-N-substituted and di-N-substituted amides are advantageously used for dielectric oil applications. The appropriate substitution provides the amides with the required physical and electrical characteristics necessary for use as a dielectric liquid in AC and energy storage capacitors.

3,684,933

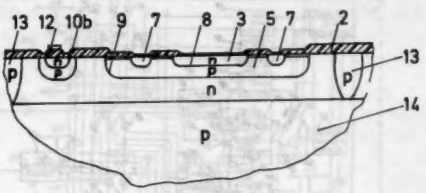
SEMICONDUCTOR DEVICE SHOWING AT LEAST THREE SUCCESSIVE ZONES OF ALTERNATE OPPOSITE CONDUCTIVITY TYPE

Egon Schulz; Ulrich Dolega, and Johann Lang, all of Freiburg, Germany, assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 858,624, Sept. 17, 1969, abandoned.
This application June 21, 1971, Ser. No. 155,289
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 3 Claims



An annular region is inserted into the base region of a transistor, this region being of opposite conductivity type to said base region and surrounds the emitter region. When a reverse biasing potential is applied to the annular region and the emitter base junction is forward biased, the annular region



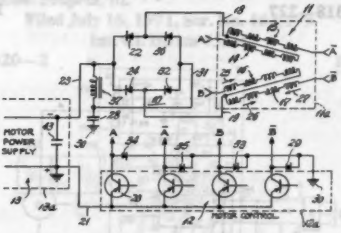
serves as a channel stopper or interrupter to induced channels which would otherwise form at the surface of the base region and extend between the collector base and emitter base PN junctions.

3,684,934

STEPPING MOTOR DRIVE CIRCUIT WITH PATH FOR INDUCED VOLTAGES

Robert J. Loyzim, Coventry, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Jan. 11, 1971, Ser. No. 105,329
Int. Cl. H02k 37/00
U.S. Cl. 318—696 7 Claims



The tendency of a stepping motor having bifilar windings to oscillate or resonate at light loads and relatively high speeds is minimized by a path which initially absorbs most of the energy in the induced voltages and then returns the energy slowly to the power supply. The path also decreases the time which the induced voltage back-biases the power supply and prevents it from energizing the windings for the next step.

3,684,935

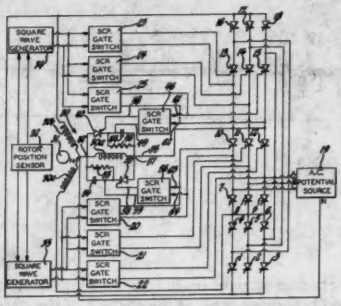
CIRCUIT FOR DISSIPATING THE POTENTIAL INDUCED IN EACH PHASE WINDING OF A CYCLOCONVERTER OPERATED MOTOR UPON TERMINATION OF CONDUCTION THERETHROUGH

Elbert M. Sawyer, Torrance, Calif., and William M. Haas, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 2, 1971, Ser. No. 159,228
Int. Cl. H02p 5/40
U.S. Cl. 318—227 4 Claims

A circuit for dissipating the potential induced in each phase winding of a cycloconverter operated alternating current motor upon the termination of conduction therethrough. The

anode-cathode electrodes of each of two oppositely poled silicon controlled rectifiers are connected in series with a respective parallel combination of a resistor and a capacitor across each phase winding of the motor. When conduction through each phase winding in either direction is to be ter-



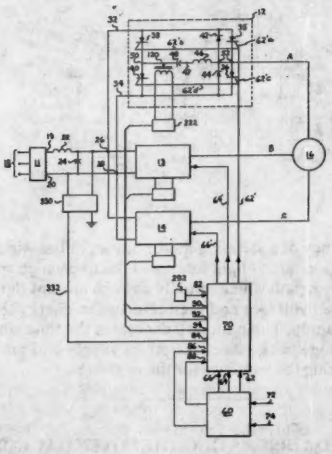
minated, a gate signal is produced and applied across the gate-cathode electrodes of the one of the silicon controlled rectifiers connected across the phase winding through which conduction is to be terminated which is forward poled by the potential induced in the phase winding as the magnitude of phase current flow therethrough decreases.

3,684,936

FIRING SIGNAL TRANSMISSION CONTROL MEANS FOR INVERTER CIRCUITS

Carlton E. Graf, Erie, Pa., assignor to General Electric Company

Filed Aug. 16, 1971, Ser. No. 172,118
Int. Cl. H02p ; H02m
U.S. Cl. 318—227 **18 Claims**



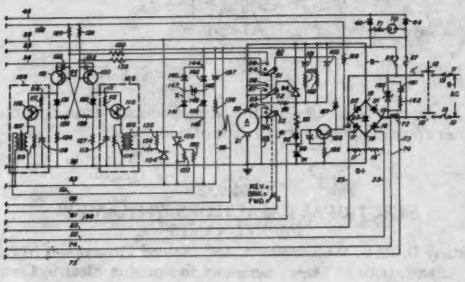
An inverter circuit of the type including load current carrying gate controlled rectifiers and commutating gate controlled rectifiers is provided with means for controlling the transmission of firing signals to the controlled rectifiers such that, upon starting, operation is always initiated by the firing of one of the commutating rectifiers to assure proper charging of a commutating capacitor prior to the firing of the first load rectifier. Upon stopping, the firing signal transmission control apparatus is effective to cause operation to cease with the firing of one of the commutating rectifiers and the resulting current flow through the commutating capacitor.

3,684,937

REVERSIBLE D. C. MOTOR SYSTEM

John R. Reeves, Trafford, Pa., and Joseph E. Oliwa, Woodbridge, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,630
Int. Cl. H02p *3/12*
U.S. Cl. 318—261 **4 Claims**



A reversible D.C. motor system is energized from an A.C. source and provided with a reversible field excitation system for controlling the direction of rotation of the motor. The field excitation is provided by a field exciting winding energized by a half-wave rectifier arrangement, the output of which is selectable to energize the field winding by either positive or negative half-wave rectified A.C. with a capacitance connected across the winding to smooth out the half-wave energization and energize the winding from the capacitance when not energized by the rectified half-wave A.C. whereby a continuous current energization is provided to the field winding during normal operation. A threshold voltage breakdown means is connected reverse biased across the field winding and has a voltage breakdown threshold which is a predetermined percent above the normal maximum peak half-wave A.C. supplied by the rectifier, so that on cessation, for any reason, of supply of half-wave rectified, A.C. from the rectifier, such as during a deenergization of the field prior to reversal thereof for reverse motor operation, the magnetic inductively stored energy of the field is rapidly dissipated in the threshold breakdown means during breakdown thereof after the field winding has discharged into the capacitance to the point of having raised its voltage to the threshold value of the breakdown means.

Operation of the motor is controlled manually by switching means having forward and reverse positions, and an intermediate braking position. In the latter position, dynamic braking of the armature is used to expedite its stoppage. Protective interlock circuits prevent energization of the armature when the field winding is deenergized and prevent applying reverse energization to the field winding before the motor has stopped. Other protective circuits prevent restarting of the motor until it is fully stopped and provide rapid deenergization of the armature under predetermined excess armature current conditions and deenergize the entire system should the excess current condition continue beyond a predetermined time.

3,684,938

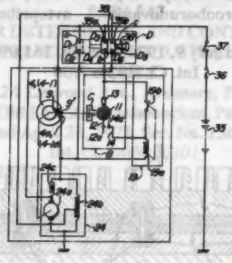
WIPER ASSEMBLY FOR VEHICLES

Takaaki Ori, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed July 12, 1971, Ser. No. 161,626
Claims priority, application Japan, Aug. 4, 1970, 45/68140
Int. Cl. H02p *1/04*
U.S. Cl. 318—443 **3 Claims**

A wiper assembly for vehicles, in which the intermittent operation of a wiper motor is effected by using a coupling

mechanism, such as a fluid coupling mechanism, the maximum transmitting torque of which varies in proportion to the rate of rotation.



3,684,939

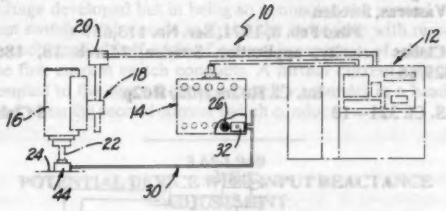
AUTOMATIC POSITIONING ACCESSORY FOR NUMERICAL CONTROL MACHINE TOOLS

Dean A. Perry, Torrance, Calif., assignor to Allied Industrial Components, Lynwood, Calif.

Filed Feb. 4, 1971, Ser. No. 112,612

Int. Cl. G05g 5/00

U.S. Cl. 318—468 **3 Claims**



An accessory for use on a numerical control (N/C) machine tool to establish the *Z*-axis zero setting of the spindle of the machine, including: motor driven means for rotating the manual *Z*-axis actuator of the machine; a manually operable switch for energizing the motor driven means; a gauge block on the *Z* axis and engageable by a cutting tool carried by the spindle; and a switch actuable by the gauge block, when engaged by the cutting tool, to de-energize the motor driven means. Thus, the spindle is stopped at the desired *Z*-axis zero setting for the particular cutting tool.

3,684,940

POWER AMPLIFIER HAVING SOURCE OF DIFFERENT POWER CAPABILITIES FOR ENERGIZING A SERVO MOTOR

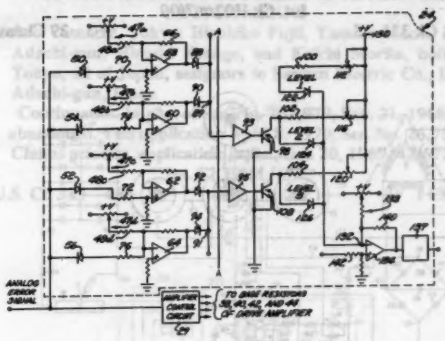
Fritz Norman Lutz, Northfield, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed April 9, 1970, Ser. No. 27,008

Int. Cl. G05b 11/01

U.S. Cl. 318—635 **20 Claims**

A control system for a direct-current servo motor drive amplifier which changes the magnitude of the voltage supplied to the amplifier according to the magnitude of the input signal to the amplifier in order to reduce the power loss in the amplifier and thereby permit the use of lower rated components, for example, transistors. The amplifier input signal is supplied to a plurality of operational amplifiers in a level-detecting circuit that operates to selectively connect a plurality of voltage



sources to supply the voltage requirements of the drive amplifier in accordance with the magnitude of the input signal. An embodiment of the voltage-switching circuit employing controlled rectifiers and an embodiment employing transistors are disclosed.

3,684,941

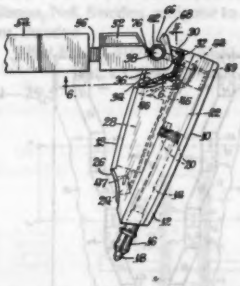
PORTABLE BATTERY POWERED ERASER AND SUPPORT THEREFOR

John J. Van Acker, Chesterland, Ohio, and Robert E. Zimmer, Niles, Ill., assignors to Addressograph Multigraph Corporation, Mount Propect, Ill.

Filed July 16, 1971, Ser. No. 163,179

Int. Cl. H01m 45/04

U.S. Cl. 320—2 **15 Claims**

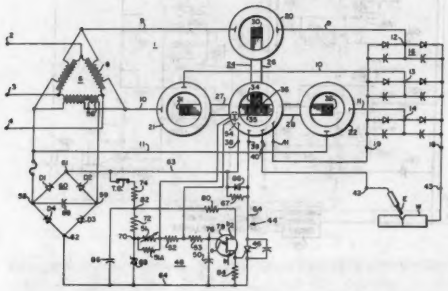


A rechargeable cordless eraser comprising a carrier for supporting and electrically charging the eraser when not in use. The eraser includes socket means formed in the housing thereof adjacent one end and having a transverse retainer bar extending between opposite sidewalls of the socket. A pair of charging contact rings are spaced apart longitudinally on the retainer bar. The carrier is adapted to be attached to and supported from a drafting table or the like and includes hook means adapted to extend into the socket means on the eraser between opposite sides thereof and engage the carrier bar. The hook means includes an upwardly opening slot dimensioned for receiving said retainer bar and a pair of deflectable spring contacts are seated in the slot of the hook for supplying charging current to the contacts of the eraser and for biasing the retainer bar against the lower end of the slot to retain the eraser in hanging position on the hook when not in use.

3,684,942
ARC WELDING CURRENT CONTROL APPARATUS

Lewis F. Pettit, Jr., Ellicott City, and Thomas L. May, Sykesville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 5, 1971, Ser. No. 104,081
Int. Cl. H02m 7/00
U.S. Cl. 321—5 29 Claims

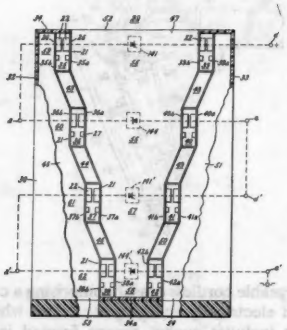


An arc welding apparatus in which the arc current is controlled by a saturable reactor having a control winding pulsatingly energized for intervals which vary in accordance with the temperature with the controlled winding and which intervals also vary in accordance with the potential which is supplied to the welding apparatus.

3,684,943
CONVERTER VALVE-PAIR ARRANGEMENT

Donald M. Demarest, Wallingford, Pa., assignor to General Electric Company

Filed Feb. 1, 1971, Ser. No. 111,314
Int. Cl. H02m 7/00
U.S. Cl. 321—8 C 5 Claims

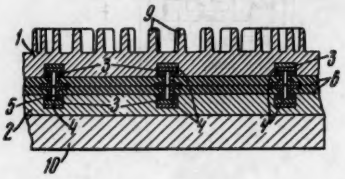


Insulative housings are provided for enclosing a plurality of semiconductor rectifiers which form valve-pairs of a plural-bridge-circuit converter. In each of said housings a valve pair of the bridge circuit which is at a higher electrical potential relative to ground is disposed above a valve pair of a bridge circuit which is at a lower electrical potential relative to ground. The housings are spaced sufficiently from one another to provide sufficient insulation between the A-C phases. Further, the space occupied by the lower potential valve pair in a housing serves to insulate the higher potential valve pair therein from ground.

3,684,944
RECTIFIER FOR AN ELECTRIC GENERATOR

Boris Ivanovich Evgrafov; Jury Alexandrovich Kupeev, and Galina Iosifovna Turok, all of Moscow, U.S.S.R., assignors to Nauchno-issledovatelsky i experimentalny institut Aoromobilnogg electrooborudovania i avtoprivoroo, Moscow, U.S.S.R.

Filed July 9, 1971, Ser. No. 161,097
Int. Cl. H02m 7/00
U.S. Cl. 321—8 1 Claim

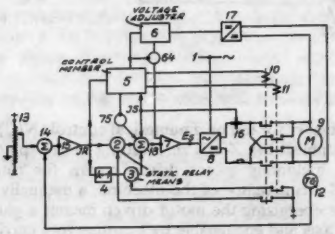


A rectifier for an electric generator, set up in a three-phase full-wave circuit, the metal case of which is in two parts each having on the joint surface an insulating base with built-in connecting tags for application of three-phase voltage to the semiconductor elements arranged inside each part of the case. The bolts holding together the cast parts simultaneously serve as d.c. output terminals for the rectifier and fasten the rectifier to a generator.

3,684,945
REVERSIBLE CONVERTER

Bo Hermansson, and Curt Hansson, both of Vasteras, Sweden, assignors to Allmanna Swenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 8, 1971, Ser. No. 113,657
Claims priority, application Sweden, March 18, 1868, 3529/68
Int. Cl. H02m 1/02; H02p
U.S. Cl. 321—13 5 Claims



A reversible converter for feeding a DC load such as a motor from an AC network has a current regulator which is supplied with a signal representing the actual value of the direct current and a desired value. The regulator is connected both to an emitter for delivering control pulses to the rectifier with a control angle which is dependent on the output voltage of the current regulator, and to a device for switching the polarity of the converter depending on the polarity of the desired current value, which causes a retarding of the converter towards inverter operation before shifting of the polarity of the converter, unblocking and advancing towards rectifier operation. A member which senses the voltage over the DC load is connected to the current regulator when the polarity of the inverter is shifted and delivers to it a signal corresponding to a control angle of the control pulses such that the sum of the inner direct voltage of the converter and the voltage over the DC load is slightly less than zero.

3,684,946

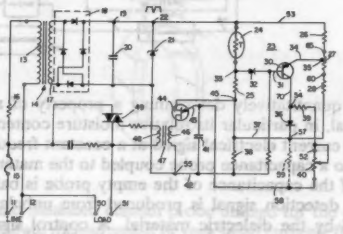
Patent Not Issued For This Number

3,684,947

CIRCUIT FOR DETERMINING AND CONTROLLING THE CURRENT SUPPLIED TO AN ADJUSTABLE RESISTANCE LOAD

Egils Evalds, 124 Linwood Ave., Ardmore, Pa., and Ernest F. Coccio, 521 Old Elm St., Conshohocken, Pa.

Filed April 21, 1971, Ser. No. 136,128
Int. Cl. G05d 23/01
U.S. Cl. 323—24 5 Claims



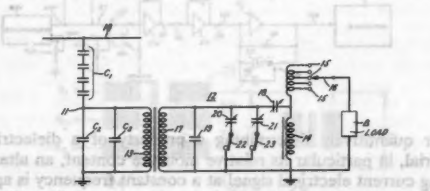
A bridge circuit with a current switch connected to the output terminals thereof. The current switch is connected to two current paths, one of which acts to develop a voltage in accordance with the rate of electrical conduction of the current switch. The last mentioned path has a variable resistor therein which can be set to vary the rate of the voltage development. A second current switch is connected to be responsive to the voltage developed but in being so connected the second current switch can be made to fire at the same time with respect to each applied half cycle of power, irrespective of what rate the first current switch conducts. A further current switch is coupled to the second current switch to connect in a heating load when the second current switch conducts.

3,684,948

POTENTIAL DEVICE WITH INPUT REACTANCE ADJUSTMENT

Kurt William Eissmann, Dalton, Mass., assignor to General Electric Company

Continuation of Ser. No. 833,076, June 13, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,670
Int. Cl. G05f 3/04
U.S. Cl. 323—43.5 R 6 Claims



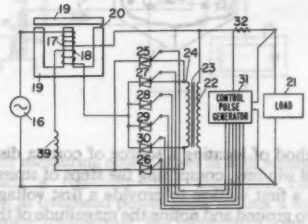
A bushing potential device having a closely coupled tertiary winding and adjustable phase angle capacitor connected in series across a loosely coupled secondary winding is provided with adjustable and/or variable capacitors in parallel with the tertiary winding. In potential devices designed for application to very high voltage systems the necessarily low minimum value of equivalent reactance in the device reduces its available range of adjustability in the low reactance region. By adding adjustable capacitance in shunt with the tertiary winding the equivalent input reactance is rendered adjustable so that it can be brought within the available range of device reactance with a less severe reduction of device reactance.

3,684,949

VOLTAGE REGULATOR UTILIZING THYRISTOR SWITCH MEANS

Yukio Yamachi, Tokyo; Hirohiko Fujii, Yamato-Machi, Kita Adachi-gun; Hiroshi Kosuge, and Koichi Morita, both of Tokyo, all of Japan, assignors to Sanken Electric Co., Ltd., Adachi-gun, Japan

Continuation-in-part of Ser. No. 707,079, Feb. 21, 1968, abandoned. This application April 8, 1970, Ser. No. 26,754
Claims priority, application Japan, Oct. 20, 1967, 42/67209
Int. Cl. G05f 1/30
U.S. Cl. 323—45 1 Claim



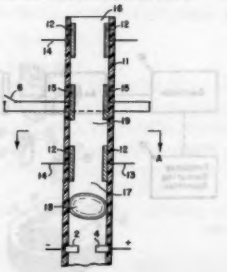
A voltage regulation system in which a transformer secondary winding is connected in series with an A.C. line in order to minimize the voltage variation thereof, and a voltage to be applied to the transformer is automatically regulated in a stepwise manner by thyristors connected to the primary winding, which thyristors can be protected from high voltages and overcurrents.

3,684,950

LEAD STORAGE BATTERY CELL ELECTROLYTE DENSITY MEASURING DEVICE AND METHOD

Ove K-G Nilsson, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Feb. 8, 1971, Ser. No. 113,361
Int. Cl. G01n 27/42
U.S. Cl. 324—29.5 10 Claims



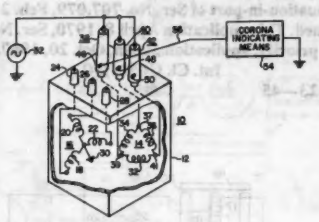
The measurement of the charge in a lead-acid storage battery through the determination of the density of the sulfuric acid electrolyte by making two conductivity measurements of the electrolyte with the second measurement being made after a dilution or concentration of the sulfuric acid to thereby resolve an ambiguity in the conductivity-density relationship.

3,684,951

METHODS OF CORONA LOCATION UTILIZING THREE-PHASE VOLTAGE DISTRIBUTION PATTERNS

Ronald T. Harrold, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1970, Ser. No. 96,343
Int. Cl. G01r 31/06, 31/08
U.S. Cl. 324—52 7 Claims



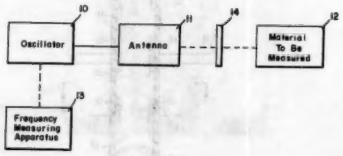
A method of locating a source of corona discharges in an electrical winding, comprising the steps of stressing the winding with a first voltage to provide a first voltage distribution pattern to ground and noting the magnitude of the first voltage at corona inception and corona extinction, and stressing the winding with a second voltage to provide a second voltage distribution pattern to ground, different than the first, and noting the magnitude of the second voltage at corona inception and corona extinction. The first and second voltage distribution patterns at the noted first and second voltages, respectively, for either corona inception or corona extinction, are then compared to determine where in the winding the voltages are identical on the two distribution curves.

3,684,952

APPARATUS FOR MEASURING DIELECTRIC CONSTANT

John W. Lundstrom, Glendora, Calif., assignor to Moisture Register Company, Alhambra, Calif.

Filed April 7, 1970, Ser. No. 26,244
Int. Cl. G01r 27/26, 27/04
U.S. Cl. 324—61 QS 2 Claims



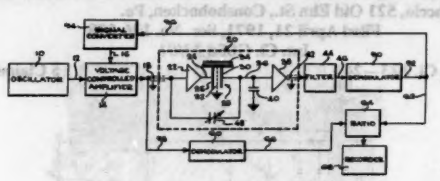
A very high frequency oscillator has an antenna as the frequency determining element. The antenna is immersed in a material having a high ionic conductivity, and the shift in the frequency of the oscillator is measured. The frequency shift is indicative of the dielectric constant and moisture content of the material. A dielectric may be interposed between the antenna and the material to reduce the range of frequency shift of the oscillator.

3,684,953

SINGLE FREQUENCY MOISTURE GAUGE WITH TWO-CHANNEL DEMODULATION AND FEEDBACK CONTROL OF INPUT

Michael P. Grant, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Dec. 21, 1970, Ser. No. 100,251
Int. Cl. G01r 27/26
U.S. Cl. 324—61 9 Claims



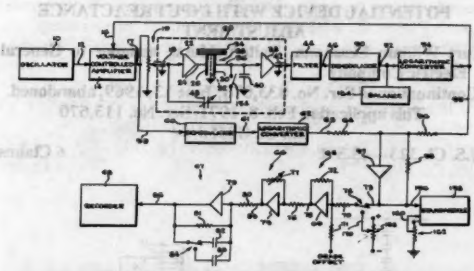
For quantitatively determining a property of a dielectric material, in particular its relative moisture content, an alternating current electrical signal at a constant frequency is applied to a capacitance probe coupled to the material. The effect of the capacitance of the empty probe is balanced out, and a detection signal is produced from unbalanced occasioned by the dielectric material. A control signal derived from the detection signal is used to vary the applied signal in a direction opposite to changes in the detection signal to reduce the demands upon the dynamic range of system components. The ratio of detection signal to applied signal is used as an indication of the property of the material.

3,684,954

SINGLE FREQUENCY MOISTURE GAUGE WITH LOGARITHMIC FEEDBACK

Henry T. Jaggers, Worthington, and Donald R. Theado, Grove City, both of Ohio, assignors to Industrial Nucleonics Corporation

Filed Dec. 21, 1970, Ser. No. 100,035
Int. Cl. G01r 27/26
U.S. Cl. 324—61 13 Claims



For quantitively determining a property of a dielectric material, in particular its relative moisture content, an alternating current electrical signal at a constant frequency is applied to a capacitive probe coupled to the material. The effect of the capacitance of the empty probe is balanced out, and a detection signal is produced from the imbalance occasioned by the dielectric material. A first logarithmic signal is derived logarithmically related to the detection signal and used to vary the applied signal in a direction opposite to changes in the detection signal to reduce the demands upon the dynamic range of system components. A second logarithmic signal is derived logarithmically related to the applied signal. The first and second logarithmic signals are then combined to produce a third logarithmic signal logarithmically related to the ratio of

said detection and applied signals, and indicative of the property of the material.

3,684,955

WIDEBAND BALANCED CURRENT PROBE

Duane J. Adams, Merritt Island, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,333
Int. Cl. G01r 31/02
U.S. Cl. 324—72 6 Claims

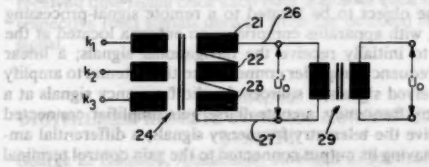
A wideband balanced current probe utilized for the detection and accurate measurement of very small currents flowing in a wire disposed in an environment involving extremely high electric and magnetic fields. My probe principally comprises a toroidal core having an electrically symmetrical bifilar wound coil disposed thereon and being protected from the high energy environment by a conductive, nonmagnetic shield. This probe provides a pair of symmetrical output signals which may be trimmed to provide even more precise electrical symmetry. The pair of symmetrical output signals is summed in phase and conveyed without contamination from the high energy field through properly balanced and shielded conductors to a relatively remote data recording unit.

3,684,956

METHOD OF SIMULATING THE ZERO VOLTAGE INCREASED BY MEANS OF MEASURED ELECTRICAL QUANTITIES

Ludwig-Benno Barbacsy, Munich; Peter Koerv, Vaterstetten, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 2, 1970, Ser. No. 86,106
Claims priority, application Germany, Nov. 27, 1969, P 19 59 534.7
Int. Cl. G01n 29/00; H02m 5/00
U.S. Cl. 324—107 4 Claims



Method of simulating the zero voltage increase at loads in three phase synchronous generators caused by load unsymmetry. The method utilizes terminal voltages measured at the synchronous generator and a zero current measured at the generator neutral and provides that an equivalent quantity U_o' is similated by means of an open δ connection which accomplishes a vectorial addition of the three terminal voltages and U_o' is converted into U_o by means of a transformer.

3,684,957

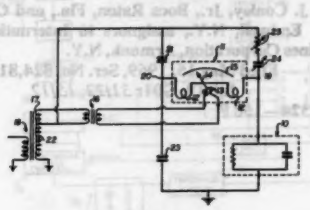
Patent Not Issued For This Number

3,684,958

APPARATUS INCLUDING CAPACITIVE BRIDGE CIRCUIT FOR MEASURING AC POWER LOSSES

George Bahder, Edison, and Felipe G. Garcia, Scotch Plains, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,748
Int. Cl. G01r 21/00
U.S. Cl. 324—142 3 Claims



Apparatus for measuring power losses in high voltage equipment, in which a relatively high capacitive current is produced, such as overhead power lines, utilizes a wattmeter and a test potential transformer. For eliminating from the current coil the effect of the capacitive component of current which is generated in the equipment under test, a variable resistor and a variable capacitor in series are connected in parallel with the current coil of the wattmeter for matching the voltage drop and capacitance of the portion of the test circuit that includes the current coil and a capacitor between the current coil and the transformer. Alternate means are shown for applying stepped down voltage from the transformer to the potential coil of the wattmeter.

3,684,959

MOVING COIL ELECTRICAL MEASURING INSTRUMENTS

John Ralph Spira, and Anthony John Newman, both of Witham, England, assignors to Crompton Parkinson Limited, London, England

Filed Nov. 6, 1970, Ser. No. 87,376
Claims priority, application Great Britain, Nov. 11, 1969, 55,122/69
Int. Cl. G01r 1/16, 3/00; H01f 7/08
U.S. Cl. 324—151 R 8 Claims

A moving coil electrical measuring instrument of the kind having a magnetic structure defining a tunnel within which the moving coil rotates, opposite polefaces of the tunnel being formed respectively on the inner surface of a surrounding ring of magnetic material and on the surface of a separate polepiece in contact with one polar surface of a permanent magnet of which the other polar surface is in contact with the

surrounding ring has the separate polepiece supported by members of non-metallic elastic material, preferably nylon, which extend across the gaps between the outer edges of the two polefaces and are maintained under compression as the result of mechanical deformation of the magnetic material adjacent one polar surface of the permanent magnet. By forming the surrounding ring and the separate polepiece stacks of laminations riveted together, the mechanical deformation can be carried out by a staking operation which crushes the laminations together.

3,684,960

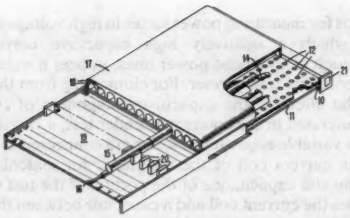
PROBE AND GUIDE ASSEMBLY FOR TESTING PRINTED CIRCUIT CARDS

William J. Conley, Jr., Boca Raton, Fla., and Clifford G. Ingram, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1969, Ser. No. 824,818

Int. Cl. G01r *31/22, 15/12*

U.S. Cl. 324—158 F **2 Claims**



A test probe adapter comprising a template having a plurality of holes conforming to the circuit pattern of a printed circuit card and a channel guide member designed to be detachably mounted to a printed circuit card. A probe arm and contact assembly is slidably inserted into the channel guide to a predetermined position where the contact tip will drop through a hole in the template and into a wiping contact with a predetermined circuit whereby an electrical connection will be made. A lead wire attached to the probe arm and contact assembly connects with the test equipment to enable the dynamic testing of a printed circuit board.

3,684,961

DISPLACEMENT TRANSDUCER WITH INDUCTIVE SENSING HEAD AND MEANS PROVIDING SEPARATE DISPLACEMENT AND DIRECTION SIGNALS

Douglas William Ballantyne Muir, Penicuik, Scotland, assignor to Irvine Findlay Limited, Penicuik, Scotland

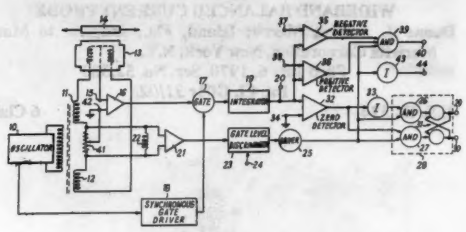
Filed Oct. 2, 1970, Ser. No. 77,417

Claims priority, application Great Britain, Oct. 6, 1969, 49,045/69

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 D **8 Claims**

A displacement transducer suitable for use in an automatic transfer machine includes an inductive sensing head the output of which is used to generate an indicating signal of a polarity and magnitude indicative of the direction and extent of the displacement of a displaceable member relative to a datum. The transducer also includes a further circuit responsive to the output of the sensing head to generate a further signal whenever the displacement is within a predetermined range of the datum, the further signal being used to gate the indicating signal, and the resultant being applied to a bistable store so that the store indicates the sense of the displacement even beyond the normal operating range in which the indicating signal is generated. The further signal may also be applied through a feedback loop to control the amplitude of the indicating signal to compensate for changes in the gap between the sensing head and the displaceable member.



3,684,962

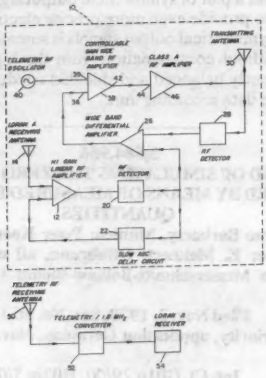
RETRANSMITTING SYSTEM FOR USE IN LOCATING REMOTE SIGNALS

Hoyt C. Hottel, Jr., Mattapoisett, Mass., assignor to The Sippican Corporation, Marion, Mass.

Filed Sept. 25, 1970, Ser. No. 75,536

Int. Cl. H04g *7/14;* **G01s** *1/24*

U.S. Cl. 325—9 **3 Claims**

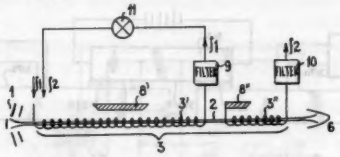


Non-distorting retransmission of the navigational signals from the object to be located to a remote signal-processing station, with apparatus comprising an antenna located at the object to initially receive the navigational signals; a linear radio frequency amplifier connected to the antenna to amplify the received signals; a source of radio frequency signals at a telemetry frequency; a controllable gain amplifier connected to receive the telemetry frequency signals; a differential amplifier having its output connected to the gain control terminal of the controllable gain amplifier and having its inputs respectively responsive to the outputs of the other two amplifiers to effectively compare their outputs and provide a voltage at the gain control terminal in accordance with any difference therebetween, whereby the telemetry frequency signals are modulated in accordance with the received navigational signals; a transmitting antenna connected to transmit the modulated signals to the processing station; and a converter at the processing station to convert the modulated signals to the frequency band of the original navigational signals.

3,684,963
TRAVELING WAVE TUBE, FREQUENCY CONVERTING TELECOMMUNICATION REPEATER

Dominique Henry, Paris, France, assignor to Thomson-CSF

Filed April 13, 1970, Ser. No. 27,507
Claims priority, application France, April 18, 1969, 6912199; Jan. 6, 1970, 7000287
U.S. Cl. 325—11 1 Claim

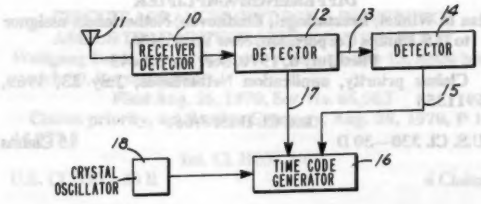


A telecommunication repeater comprises a travelling wave tube which amplifier the received signal along a portion of the delay line thereof. The amplified signal is fed back to the input after undergoing a frequency change. The amplified signal at the frequency resulting from the frequency change is collected at the output of the tube.

3,684,964
DECODING SYSTEM AND METHOD FOR GENERATING TIME SIGNALS

James A. Bright, Denver, and Craig L. Wilson, Englewood, both of Colo., assignors to Hathaway Instruments, Inc., Denver, Colo.

Filed Aug. 7, 1970, Ser. No. 61,983
Int. Cl. H04b 1/16
U.S. Cl. 325—58 8 Claims



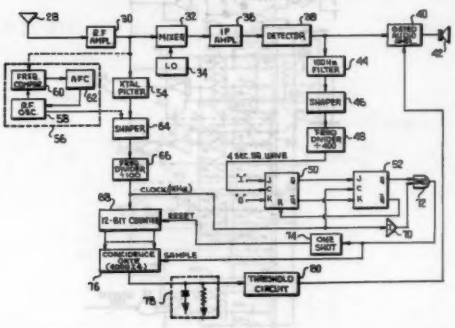
A time code generating system and method; the system comprises a radio time signal decoder and a time code generator utilizing a highly stable frequency source for producing a time code indicating time of year in days, hours, minutes and seconds. The generating system is synchronized with the received time signal once each hour and once each minute by respective reset signals derived from the detected radio time signal.

3,684,965
DIGITALIZED REMOTE CONTROL COMMUNICATIONS SYSTEM

George E. Gautney, Annandale; Rowland S. Johnson, Springfield, and John Piombino, Annadale, all of Va., assignors to Gautney & Jones, Falls Church, Va.

Filed July 15, 1970, Ser. No. 55,050
Int. Cl. H04j 1/14
U.S. Cl. 325—64 19 Claims

A transmitter, which remotely controls the demuting of a normally muted receiver, derives a command signal from a carrier wave, the command signal having a frequency f/k_1 which is a first precise fraction of the frequency f of the carrier wave. The receiver derives from the received carrier wave a reference signal having a frequency f/K_2 which is a second fraction of the frequency f of the carrier wave. The receiver also detects the command signal at frequency f/K_1 and derives therefrom successive timing intervals TK_1/f. The reference signal cycles are counted during the timing intervals and the count should equal TK_1/K_2 if the proper command signal has been detected. If this number is counted a control signal is provided for operating a muting/demuting circuit in the receiver. Selective addressing of different receivers can be effected by employing different command signal frequencies for different receivers. In an alternative embodiment, the receivers all respond to the same command signal frequency but respond to different command signal durations. In still another embodiment the receiver derives the timing intervals from the reference signal and counts command signal cycles occuring during these intervals to control the demuting circuit upon appropriate count detection.

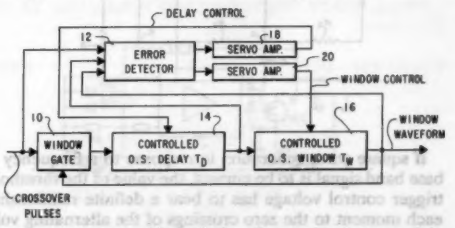


3,684,966
Patent Not Issued For This Number

3,684,967
AUTOMATIC CONTROL OF POSITION AND WIDTH OF A TRACKING WINDOW IN A DATA RECOVERY SYSTEM

William J. Kelly, Sauqolt, N.Y., assignor to Cogar Corporation, Wappingers Fall, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,932
Int. Cl. H03k 1/18
U.S. Cl. 328—63 7 Claims

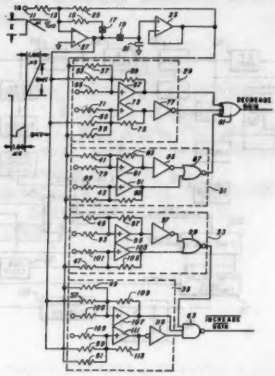


A data recovery tracking window for use in phase modulation systems. Each information data pulse triggers a one-shot delay multivibrator. At the trailing edge of the delay pulse, a second one-shot multivibrator generates a window pulse. The window pulse brackets the next data pulse. By keeping the duty cycle of each of the multivibrator waveforms fixed, the window pulses correctly track the data pulses even with a changing data rate. In the preferred embodiment of the invention, a single error detecting circuit is used to keep both duty cycles constant at pre-set values.

3,684,968
FLOATING POINT AMPLIFIER

Paul E. Carroll, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1970, Ser. No. 68,262
Int. Cl. G06g 7/12
U.S. Cl. 328—142 9 Claims

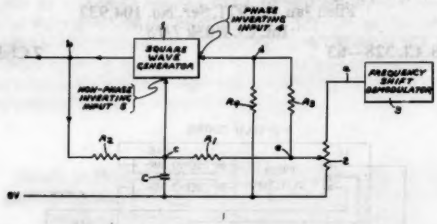


A floating point amplifier amplifies an analog signal for presentation to an analog to digital converter. The output of the floating point amplifier is sensed and the parameters of the signal are compared to cause a digital gain increase or gain decrease to the floating point amplifier.

3,684,969
DEMODULATOR FOR FREQUENCY SHIFT MODULATED SIGNALS

Leif Egon Jensen, Hvidovrevej 76 C DK-2610, Rodovre, Denmark

Filed June 22, 1971, Ser. No. 155,462
Claims priority, application Sweden, June 23, 1970, 8635/70
Int. Cl. H04l 27/14
U.S. Cl. 329—104 3 Claims

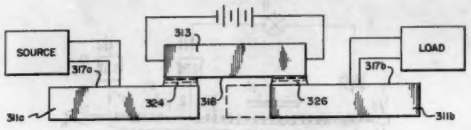


If square wave generation in response to a frequency shift base band signal is to be correct, the value of the threshold or trigger control voltage has to bear a definite relationship at each moment to the zero crossings of the alternating voltage component of the baseband signal. This is achieved by two resistors connected in series between a frequency demodulator and the output of a square wave generator, with the junction of the resistors being connected to a first non-phase inverting input of the generator, a third resistor connected between the demodulator and a second phase-inverting input of the generator, a fourth resistor connected between a reference potential and the second input, and an integrating capacitor connected between the reference potential and the junction of the first and second resistors.

3,684,970
SONIC WAVE COUPLER AND AMPLIFIER WITH DETERMINABLE DELAY CHARACTERISTICS

Wen-Chung Wang, 25 Trescott Path, Northport, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,456
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 13 Claims

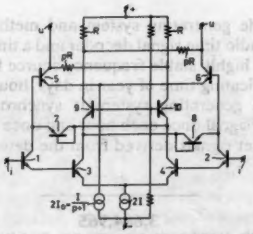


A sonic wave coupler and amplifier formed by a preferably anisotropic substrate having a plane surface with an electrically biased piezoelectric semiconductor solid juxtaposed thereto and preferably a thin fluid couplant layer between said substrate and semiconductor solid. A generator coupled to said substrate launches sonic waves in a direction parallel to the interface between the substrate and the semiconductor solid and the velocities in the media are such that the wave penetrates (deeply penetrates in the preferred embodiments) the semiconductor solid and is amplified by an electric field component parallel to the wave propagation direction. By a reciprocal process the sonic waves reenter the substrate and are received by a receiver. Time delay characteristics may be obtained by multiple reflections of elastic energy waves within the semiconductor.

3,684,971
DIFFERENCE AMPLIFIER

Jan te Winkel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,443
Claims priority, application Netherlands, July 23, 1969, 6911358
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 15 Claims



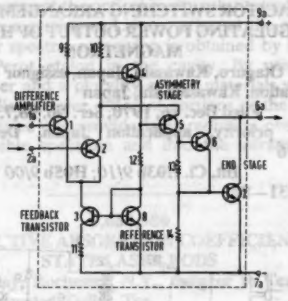
A Darlington difference amplifier including two pairs of transistors in which the offset voltage is reduced by applying a compensation voltage to the input or to the output of the amplifier. This voltage contains, in a compensating sense, the error voltage caused by any difference between the current amplification factors of the output transistors. The compensation voltage is obtained by reproducing the base-emitter voltages of the input transistors of the amplifier in the PN junctions of one or more semiconductor elements traversed by the same current.

3,684,972

INTEGRATED OPERATIONAL AMPLIFIER

Gerhard Gehring, Grafelfingerstr. 21, 8 Munich 55, and Wilfried Hammelehle, Giesinger Bahnhofplatz 5, 8 Munich 90, both of Germany

Filed Aug. 18, 1970, Ser. No. 64,708
Claims priority, application Germany, Aug. 29, 1969, P 19 44 075.6
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 4 Claims



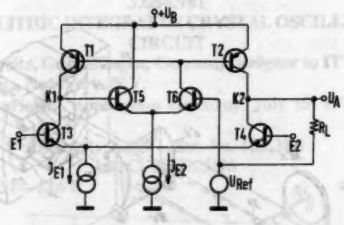
In an integrated operational amplifier, a reference transistor has a base electrode directly connected to the base electrode of a feedback transistor, a collector electrode directly connected to its own base electrode and an emitter electrode directly connected to a source of reference voltage. The collector-emitter path of the feedback transistor is connected in series with an ohmic resistor to the emitter electrodes of both transistors of a difference amplifier.

3,684,973

CIRCUIT ARRANGEMENT FOR A DIFFERENCE AMPLIFIER IN INTEGRATED CONSTRUCTION

Wolfgang Duck, deceased, late of Wilramstrasse 13, 8000 Munich 80, Germany (heir)

Filed Aug. 26, 1970, Ser. No. 66,983
Claims priority, application Germany, Aug. 28, 1970, P 19 44 027.8
Int. Cl. H03k 3/68
U.S. Cl. 330—30 R 4 Claims



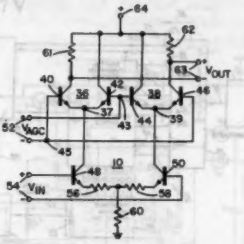
A monolithically integrated difference amplifier having closely adjacent transistors of equal geometrical form and substantially equal properties such that the collector currents in said transistors are equal when said difference amplifier is in a quiescent state is described. The output impedances of the transistors forming the difference amplifier are active impedances, preferably transistors connected in a common base configuration and having their bases connected in common. Coupling between the bases of the active impedance output circuits and the difference amplifier is accomplished by means of an auxiliary difference amplifier.

3,684,974

AUTOMATIC GAIN CONTROL RF-IF AMPLIFIER

James E. Solomon, Scottsdale, and Walter Richard Davis, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 29, 1968, Ser. No. 701,368
Int. Cl. H03f 2/68
U.S. Cl. 330—30 D 8 Claims



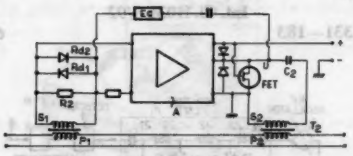
Disclosed is a differential amplifier circuit featuring electronic gain control, and this circuit may be constructed in monolithic integrated form. In one embodiment of the invention, first and second pairs of differentially coupled transistors are connected respectively to first and second differentially coupled input transistors, and the input transistors are connectable to a source of differential input signals. Differential output signals are derived at the outputs of transistors in each of the pairs of transistors, and by applying an automatic gain control (AGC) signal at a node which is common to the transistor pairs, electronic gain control is obtained without a differential signal arising therefrom. In another embodiment of the invention, an output differential amplifier stage is directly coupled to transistors in the first and second pairs of transistors so that any common mode signal present there is rejected in said output stage.

3,684,975

NEGATIVE IMPEDANCE AMPLIFIER

Cesare Valfre, via Borgosesia 46 bis, Torino, Italy

Filed July 10, 1970, Ser. No. 53,801
Int. Cl. H03f 21/00, 3/16
U.S. Cl. 330—207 P 4 Claims



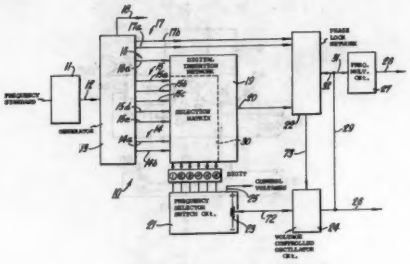
A negative impedance amplifier for a transmission line having two transformers and an amplifier. The size of the transformers is reduced and the resulting losses are compensated by increasing the gain of the amplifier. A negative feedback loop also reduces losses. A capacitor circuit is placed on the line connections to permit remote feeding. The transformers can be connected to the amplifier to provide for either series type or parallel type connection to the line.

3,684,976

FREQUENCY SYNTHESIZER HAVING OUTPUT OSCILLATOR PHASE LOCKED TO FREQUENCIES DERIVED FROM A SINGLE FREQUENCY STANDARD

Gerard Linel Patrick Terreault, Granby, Quebec, Canada, assignor to General Precision Industries Limited, Montreal, Quebec, Canada

Filed Jan. 11, 1971, Ser. No. 105,493
Int. Cl. H03b 3/04
U.S. Cl. 331—22 **16 Claims**



A frequency synthesizer for producing selected frequencies to support an associated receiver. The synthesizer comprises means to generate a discrete frequency signal and generating circuit means adapted to derive from said discrete frequency signal a plurality of signals of different frequencies. A circuit means is further provided and made responsive to a selection mechanism whereby desired synthesized frequencies are rapidly selected by mixing and dividing the signals of different frequencies. A voltage controlled oscillator and phaselock means reduce the frequency selection response time to provide a substantially exact output frequency. The selection mechanism further controls the bias voltage of the voltage controlled oscillator to approximately tune it to the required output frequency.

ERRATUM

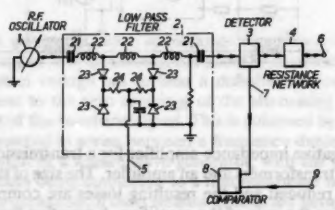
For Class 331—94.5 see:
Patent No. 3,684,946

3,684,977

ADJUSTABLE FREQUENCY GENERATOR EQUIPMENTS

Roger Stanley Viles, Harpenden, England, assignor to Marconi Instruments Limited, London, England

Filed Oct. 19, 1970, Ser. No. 81,978
Claims priority, application Great Britain, Oct. 24, 1969, 52,173/69
Int. Cl. H03b 3/02
U.S. Cl. 331—183 **6 Claims**



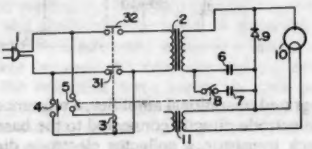
An adjustable frequency generator equipment having automatically controlled output level and low harmonic distortion comprises an adjustable R.F. oscillator, a variable bandwidth low pass filter, a detector and a comparator. The detector, at the output of the filter, provides a D.C. output proportional to the R.F. input thereto. This D.C. voltage is fed to one terminal of the comparator, and the output from the comparator controls varactor diodes in the filter, thereby automatically adjusting the upper cut-off frequency of the filter to a value close to the fundamental frequency of the oscillator. The output level of the equipment is adjusted by varying the reference voltage applied to a second terminal of the comparator.

3,684,978

CAPACITOR SWITCHING ARRANGEMENT FOR REGULATING POWER OUTPUT OF HEATING MAGNETRON

Tadayasu Otaguro, Kawasaki, Japan, assignor to The General Corporation, Kawasaki-shi, Japan

Filed Dec. 16, 1970, Ser. No. 98,735
Claims priority, application Japan, Dec. 18, 1969, 44/120376
Int. Cl. H03b 9/10; H05b 9/00
U.S. Cl. 331—86 **6 Claims**



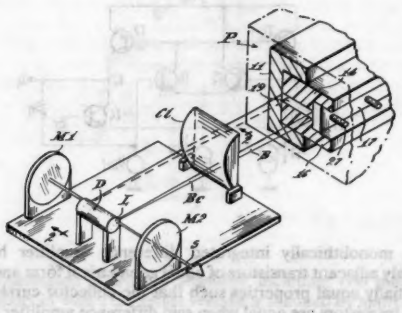
In a microwave heating apparatus comprising a magnetron, a plurality of capacitors are provided in the high tension rectifier circuit of the magnetron to vary the power output from the magnetron, and are changed over by the same number of switches as the number of the capacitors.

3,684,979

TRANSVERSE DYE LASER STIMULATION WITH A PULSED NITROGEN LASER

James A. Myer, Woburn; Ramesh D. Sharma, Medford, and Edward J. Kierstead, Saugus, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 24, 1969, Ser. No. 879,285
Int. Cl. H01s 3/20
U.S. Cl. 331—94.5 **12 Claims**



Stimulated emission of radiation (laser action) is produced in materials generally classed as dyes and scintillators. A cavity or cell of the dye materials in solid or liquid solution or as a vapor is pumped or excited with 3371 angstroms radiation, focused to a line with a cylindrical lens from a rectangular beam of such radiation produced with a pulsed crossed field

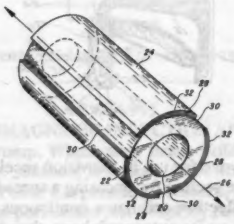
nitrogen gas laser. The focused line, which is transverse to the beam produced by the exciting laser, lies near the surface of the dye material in the cell, and the cell is substantially as long as the line. The cell lies within an intensifying optical cavity formed by a 100 percent reflecting mirror and a partially reflecting output mirror, both perpendicular to the line of focus of the pumping radiation. The stimulated emission from the dye material is characterized by a short pulse width and little loss of energy in the coupling between the two lasers. High pulse rates without dye circulation, and high conversion efficiencies of the dyes when so pumped, are obtained. For frequency adjustment the optical cavity substitutes for the 100 percent mirror a grating or Littrow prism at the appropriate angle. Further spectral narrowing is obtained by inserting a tilted Fabry-Perot etalon in the cavity. By using such a frequency tuner and a plurality of dye materials which emit stimulated radiation over different portions of the spectrum, the present device can provide laser radiation over virtually the whole visible spectrum and into the infrared and ultraviolet.

3,684,980

HIGH EFFECTIVE ABSORPTION COEFFICIENT SOLID STATE LASER RODS

David Blair Kay, Rochester, N.Y., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 13, 1970, Ser. No. 80,422
Int. Cl. H01s *3/06*
U.S. Cl. 331—94.5 **8 Claims**



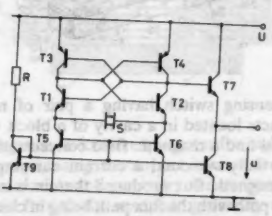
The effective absorption coefficient of solid state laser rod is increased by selectively coating the longitudinal surface of the laser rod or the rod cladding with a highly light reflective layer such that substantial portions of the light which passes unabsorbed through the rod is reflected back into the rod.

3,684,981

MONOLITHIC INTEGRABLE CRYSTAL OSCILLATOR CIRCUIT

Walter Kreitz, Gundelfingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Claims priority, application Germany, July 15, 1970, P 20 34 990.0.
Filed July 2, 1971, Ser. No. 159,384
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **4 Claims**



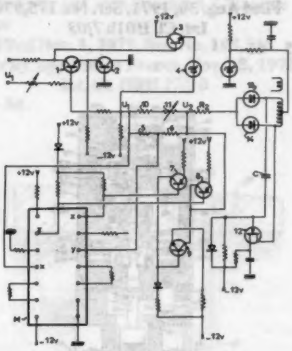
This is a monolithic integrable crystal oscillator circuit wherein the quartz is connected between the emitter of two transistors. The emitter resistors are replaced by transistors connected as constant current sources. The collector resistors are replaced by complementary transistors.

3,684,982

FUNCTION GENERATOR AND VARIABLE CAPACITY DIODE OSCILLATOR EMPLOYING SAID GENERATOR

Roger Charles Charbonnier, Meudon, France, assignor to Adret-Electronique Vladimir Komarov, Trappes, France

Filed July 15, 1971, Ser. No. 163,544
Int. Cl. H03b *5/12*
U.S. Cl. 331—177 V **4 Claims**



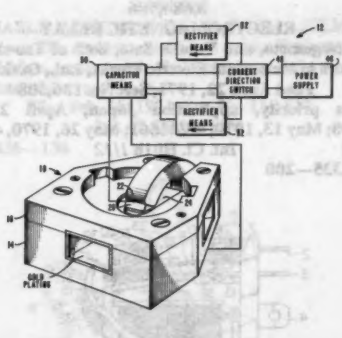
Function generator capable of furnishing from a voltage applied to its input, a function comprising a sum of terms respectively proportional to the different successive powers of said voltage. The generator comprises an analog multiplier having two inputs to which the voltage is applied and an output. There are means for reinjecting in the outputs an adjustable fraction of the output voltage of the analog multiplier.

3,684,983

HIGH SPEED CIRCULATOR SWITCH

John J. Cotter, and Charles J. Abronson, both of Agoura, Calif., assignors to E&M Laboratories

Filed June 19, 1970, Ser. No. 47,673
Int. Cl. H01p *1/32*; H03k *17/64*, *17/66*
U.S. Cl. 333—1.1 **7 Claims**



Substantial improvements in the switching speeds of switchable ferrite devices for microwave transmission are realized by the utilization of a low inductance, low loss waveguide section having a principally non-metallic body and a microwave ferrite element, in conjunction with an electromagnet that is operated by a switchable driver circuit that alternates between opposite polarities and includes means for storing inductive currents while reversing polarity during the

switching interval. Such arrangements provide improvements of as much as several orders of magnitude in the switching times of practical microwave devices.

3,684,984

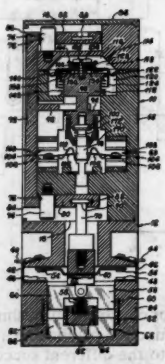
Patent Not Issued For This Number

3,684,985

CONVERTIBLE TIMING DEVICE

Robert M. Flanagan, Summit, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,970
Int. Cl. H01h 7/03
U.S. Cl. 335—61 **8 Claims**



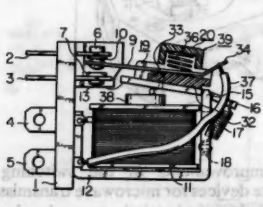
A timing device is affixed to an actuator which is a part of a relay or a similar apparatus and which is moved between a first position and a second position. The timing device provides a timed interval between movement of the actuator and some later desired event. The timed interval may be measured from the departure of the actuator from either the first position or the second position, as selected by affixing the actuator to either one end or the other end of an actuator coupling means which couples the actuator to the timing means of the timing device.

3,684,986

ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, and Yutaka Sato, both of Tsu-shi, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed April 22, 1971, Ser. No. 136,508
Claims priority, application Japan, April 22, 1970, 45/34598; May 13, 1970, 45/46561; May 26, 1970, 45/52110
Int. Cl. H01h 1/12
U.S. Cl. 335—200 **6 Claims**



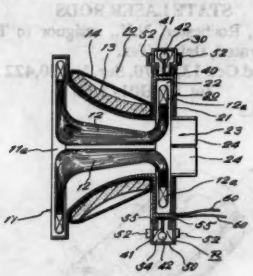
An improved electromagnetic relay including a movable contactor arm made of a conductive rigid plate material. The arm is bent upward adjacent the opposite end to the movable contactor end thereof and supported rockably on a bottom face having a tapered section at the contactor side of an insulative arm-supporting frame secured on the armature for integral actuation therewith. The frame includes a spring for biasing the arm downward at a position between the tapered corner of frame bottom and the bent corner of the arm, so that, in non-excited state of electromagnet, the movable contactor is urged against a normally closed contact by the downward biasing applied with the tapered corner as fulcrum and, in excited state, the contactor is urged reversely against a normally opened contact by the same biasing applied with the bent corner as fulcrum. The frame may include forcibly opening means for contacts adjacent both the tapered and bent corners.

3,684,987

DEFLECTION YOKE FOR TELEVISION RECEIVERS

Koji Nishida, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,267
Claims priority, application Japan, May 24, 1969, 44/48171
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **6 Claims**



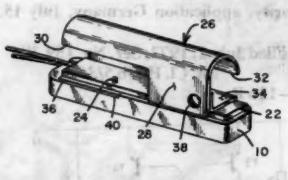
A deflection yoke for use in television receivers is provided in which a flange section for encasing a spread rear portion of a horizontal deflection coil has a continuous circumferential concave groove on its outer periphery, thereby providing for accomodation of circuit elements in the concave groove.

3,684,988

CURRENT SENSING SWITCH

Andrew Kuehn, III, St. Paul, Minn., assignor to Systematics, Inc., St. Paul, Minn.

Filed March 8, 1971, Ser. No. 121,984
Int. Cl. H01h 53/10, 51/28
U.S. Cl. 335—204 **4 Claims**



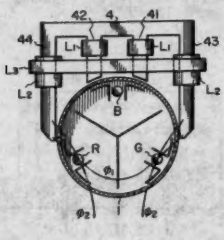
A current sensing switch having a pair of magnetically operated contacts located in a cavity of a block of non-conductive material and a magnetic field concentrating member adapted to partially surround a current carrying conductor such that the magnetic flux produced therein is confined to a predetermined path with the flux path being in close proximity to the cavity and the magnetically operated contacts therein. The switch further includes a field compensating magnet for aiding or bucking the magnetic field produced by current flow through the conductor.

3,684,989

CONVERGENCE APPARATUS FOR USE IN COLOR TELEVISION CATHODE RAY TUBES

Hiroshi Ikeuchi, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

Filed Aug. 13, 1970, Ser. No. 63,406
Claims priority, application Japan, Aug. 15, 1969, 44/77278
Int. Cl. H01f 7/00
U.S. Cl. 335—210 1 Claim



In a convergence apparatus for use in a color television cathode ray tube including three delta oriented electron guns B, R and G, the convergence apparatus comprises a single core. The core has four legs, two inner legs extending to oppose pole pieces of electron gun B and two outer legs extending to oppose pole pieces of electron guns R and G, and a compensation coil encircling the two outer legs.

3,684,990

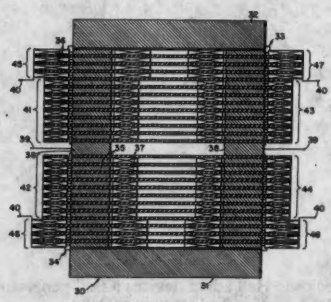
Patent Not Issued For This Number

3,684,991

ELECTROMAGNETIC INDUCTION APPARATUS

John George Trump, Winchester; Brian Skillicorn, Topsfield, and Bryon Lee Johnson, Westboro, all of Mass., assignors to High Voltage Power Corporation, Wesboro, Mass.

Continuation-in-part of Ser. No. 840,090, June 2, 1969, Pat. No. 3,593,243, which is a continuation-in-part of Ser. No. 567,641, July 25, 1966, abandoned. This application July 12, 1971, Ser. No. 161,833
Int. Cl. H01f 15/14, 27/28
U.S. Cl. 336—70 12 Claims



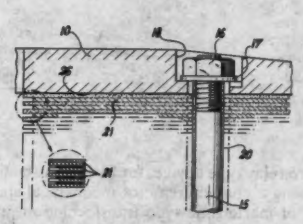
Electromagnetic induction apparatus for high-voltage, high-power operation, using a compact interrupted magnetic circuit whose materials and geometry are so designed as to confine magnetic flux to the compact geometry associated with the magnetic circuit, to confine operating electric currents to windings which cooperate in forming the magnetic circuit, and to distribute both normal and transient voltages quickly and evenly along both the winding and the magnetic circuit so that the electric field strength of the system is maintained high. The apparatus may be applied to either the transformer or the reactor function, but in either event the purpose and advantages of the invention generally relate to so-called large power operation (above ten megavolt amperes) at voltages in the EHV and UHV levels.

3,684,992

PRODUCTION OF MAGNETIC COILS FOR THE CREATION OF INTENSE FIELDS

Michel Huguet, Meudon-la Foret; Paul-Henri Rebut, Versailles, and Antoine Torossian, Bourg-la-Reine-Foret, all of France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Nov. 1, 1971, Ser. No. 194,315
Claims priority, application France, Nov. 18, 1970, 7041383
Int. Cl. H01f 27/10
U.S. Cl. 336—58 7 Claims



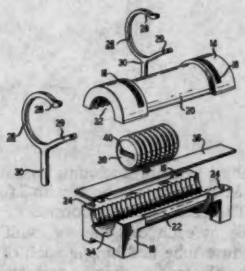
A magnetic coil designed so as to permit the creation of intense magnetic fields under pulsating or continuous working conditions is constituted by a stack of conducting metal sheets and insulating sheets said metal sheets making local contacts in such manner that they form a conducting spiral, said metal sheets comprising more than two locally cut-out portions staggered from one metal sheet to the next following metal sheet, and means delimiting a circuit for a cooling fluid against said cut-out portions so that the fluid is in contact with the lateral faces of the metal sheets. By this means, the copper-water thermal exchange surface is considerably increased ; the insulating sheets may project between the turns thus improving the quality of the insulation ; and the stack can be tightly clamped by studs reinforcing the electrical contacts and improving the resistance to electro-dynamic forces.

3,684,993

VARIABLE INDUCTANCE COIL FORM ASSEMBLY

Curtis Hazen, III, Andover, and Gerd Achim Tuchen, Boxford, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 18, 1971, Ser. No. 116,527
Int. Cl. H01f 21/06
U.S. Cl. 336—136 6 Claims



The assembly includes a coil form having a coil receiving portion and an internally threaded center hole extending lon-

gitudinally therethrough. The internally threaded surface has an axial groove therein extending along its length, and the groove is generally concentric to the threaded surface and has a depth greater than the depth of the thread. A thin flat resilient strip is positioned within the groove. The strip has a width that substantially occupies but is less than the width of the groove and is of a thickness that is less than the distance that the depth of the groove exceeds the depth of the thread.

3,684,994

HOT WIRE RELAY TYPE DEVICES AND METHODS OF MAINTAINING OR PRODUCING SUCH DEVICES

Hugh Jean Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 2, 1969, Ser. No. 838,501

Int. Cl. H01h *37/32, 37/50, 61/00*

U.S. Cl. 337—140 **10 Claims**

A hot wire relay type device, formed from an alloy composition exhibiting a characteristic of mechanical shape memory as a result of martensitic-type transformation, is operatively maintained or produced for use as a heat reactive controller in a way so that the supported termination portions do not react to heat or, at the very least, heat above transition simultaneously with the portion of the device intermediate such termination portions whereby the wire achieves a thermal balance throughout its entire body.

3,684,995

ELECTRICAL BUSHING ASSEMBLY

William E. Horton, III, Bogart, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1970, Ser. No. 96,457

Int. Cl. H01h *85/00*

U.S. Cl. 337—224 **5 Claims**

An electrical bushing assembly including an insulating body member having an axial opening or bore, with a fuse assembly disposed therein. The fuse assembly consists of a fuse tube having an electrode at each end thereof, with a fuse link located within the fuse tube and having each of its ends attached to one of the electrodes. A semiconducting coating is disposed on the inside wall of the fuse tube and an insulating member is disposed around the fuse link and that portion of the lead wire within the fuse tube.

3,684,996

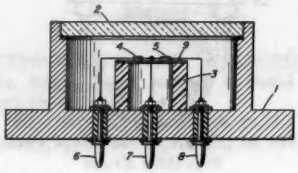
HIGH-SENSITIVITY, LONG-TIME-CONSTANT THERMISTOR BOLOMETER

Frank Schwarz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Division of Ser. No. 864,842, Oct. 9, 1969, Pat. No. 3,631,434, which is a continuation-in-part of Ser. No. 564,391, July 11, 1966, abandoned. This application April 13, 1970, Ser. No. 27,623

Int. Cl. H01c *7/08*

U.S. Cl. 338—18 **5 Claims**



A high-sensitivity, long-time-constant thermistor bolometer having a heat sink and two thermistor elements in the same plane thermally connected to the heat sink through a path of high thermal impedance including a cylinder of material of low heat conductivity.

3,684,997

HALL EFFECT DEVICE HAVING AN OUTPUT VOLTAGE OF THE NTH POWER CHARACTERISTICS WITH MAGNETIC INDUCTION

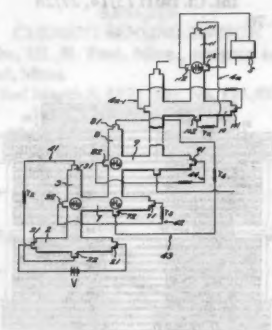
Noboru Masuda, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Sept. 5, 1969, Ser. No. 855,615

Claims priority, application Japan, Sept. 14, 1968, 43/65985

Int. Cl. H01c *7/16*

U.S. Cl. 338—32 H **18 Claims**



In the disclosed Hall effect devices a Hall generator section energized by a source has a second Hall generator section formed by elongating the first section at the location of the output terminal. The second Hall generator section includes two output terminals. One of the input terminals of the second Hall generator section is an integral extension of the output terminal of the first Hall generator section. Suitable circuit means connect the other input terminal of the second Hall generator section to the other output terminal of the first Hall generator section. Successive Hall generator sections can be formed by elongating the material of the preceding Hall

generator sections at one of the output terminals of the preceding Hall generator section and connecting the extreme newly formed input terminal of the successive section to the other output terminal of the preceding section. The same magnetic field is applied to all the sections. The voltage at the output terminals of the last section is a function of the power of the magnetic field equal to the number of sections. One or more thermistors having temperature characteristics opposed to those of the section may be added in series with the input terminals of the section. Suitable magnetic resistances may be added in feedback relationship to the output of the final section to promote linearity of the output.

3,684,998

METHOD AND APPARATUS FOR PRODUCING FUNCTION POTENTIOMETERS

Henry S. Zablocki, 181 Hillside Ave., Nutley, N.J.

Continuation-in-part of Ser. No. 530,465, Feb. 28, 1966, Pat. No. 3,371,138, which is a continuation-in-part of Ser. No. 434,180, Feb. 23, 1965, abandoned, which is a continuation-in-part of Ser. No. 95,449, Jan. 25, 1961, abandoned. This application Jan. 16, 1968, Ser. No. 698,278

Int. Cl. H01c *5/02*

U.S. Cl. 338—174 **3 Claims**

A method is disclosed for producing conductive plastic potentiometer elements by spraying the conductive plastic on a substrate and then molding to obtain a flush surface.

3,684,999

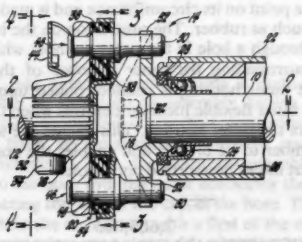
CONDUCTIVE FLEXIBLE COUPLING

Leo F. LaFramboise, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 87,773

Int. Cl. H01r *5/06*

U.S. Cl. 339—3 **3 Claims**



A conductive flexible coupling for coupling together two rotatable shafts in which a flexible member disposed between and connected to a conductive flange carried by one shaft and to a conductive flange carried by the other shaft is provided on at least one side thereof with a flexible screen for providing an electrical path between the two conductive flanges.

3,685,000

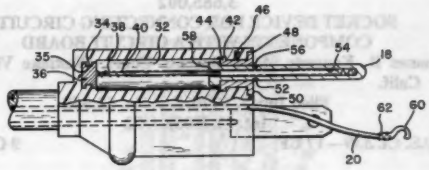
LINE PLUG WITH RETRACTABLE GROUNDING PIN

Vernon L. Robbins, 72 Richmond St., Brockton, Mass.

Filed Oct. 7, 1970, Ser. No. 78,745

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 P **10 Claims**



A plug having a pair of fixed prongs, a retractable grounding pin, and a grounding wire is provided for making an electrical connection by insertion in a female receptacle. The fixed prongs are connected to the line and load leads of a power cord and the grounding wire is connected to the ground lead of the power cord. The grounding wire is provided with a hook shaped terminal and the retractable grounding pin is formed with an annular groove adapted for locking engagement with the terminal. If the female receptacle is of the type adapted to receive a three prong male plug, the grounding wire is locked within the annular groove by means of the terminal, whereby the grounding pin is secured in the extended position. If the female receptacle is of the type adapted to receive a two prong male plug, the grounding wire is attached to a ground point on the box housing the receptacle by means of the terminal, whereby the grounding pin is retracted as the plug is inserted in the receptacle.

3,685,001

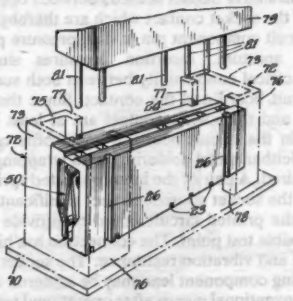
ELECTRICAL TERMINATOR ASSEMBLY AND METHOD OF MAKING COMPONENTS OF THE SAME

Kerry M. Krafthefer, c/o Molex Incorporated, 5224 Katrine Ave., Downers Grove, Ill.

Filed Sept. 29, 1970, Ser. No. 76,383

Int. Cl. H05k *1/07*; **H01r** *23/02*

U.S. Cl. 339—17 L **11 Claims**



An electrical terminator assembly comprises a connector having a cavity open at the back side for receiving terminals each with opposed contact arms. The arms are adapted to receive therebetween conductors which project through holes that are cold-formed in the connector from the front side. The terminal also has a U-shaped central body portion joined to the arms and which seat on opposed lips in the connector to

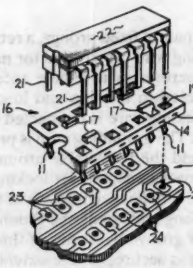
prevent retraction therefrom. The connector is an extruded plastic piece in which notches are sawed to receive stop wings on the terminal and in which grooves are sawed to receive module supports that interfit with the connector and provide opposed channels for receiving a circuit module. The module contains the conductors that project through the cold-formed holes in the terminal.

3,685,002

SOCKET DEVICE FOR CONNECTING CIRCUIT COMPONENTS WITH A CIRCUIT BOARD

James D. Kennedy, 4420 Regents Court, Westlake Village, Calif.

Filed July 7, 1970, Ser. No. 52,958
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF **9 Claims**



A socket contact device for connecting a circuit component such as an integrated circuit package to a circuit board such as a printed circuit board is disclosed. The device comprises a socket contact having a plurality of interconnected ribbon-like spring segments which are distorted during insertion into apertures in the circuit board. The contact is secured by the multiple spring segment pressures acting within the aperture in the circuit board in such a manner that electrical contact is made between the socket contact and both the upper and lower surfaces of the circuit board. Portions of the interconnected spring segments protrude above the circuit board and are so disposed that they may be received and captivated within an insulative header which may be organized to locate the contacts in a plurality of interrelated positions. Pins coupled to a circuit component are forced to pass (through apertures in an insulative header if used) between opposing spring segments of the socket contact which are thereby distorted to hold the circuit component pin at dual pressure points within the board aperture. Insertion pressures simultaneously enhance electrical conductivity between both surfaces of the printed circuit board and the contact. Since the pins of the component and the socket contact are at least in part contained within the circuit board, a low profile connection is achieved. Neither metal soldering, wire wrapping nor crimping are required. A pair of the interconnected spring segments comprising the socket contact project significantly below the surface of the printed circuit board to provide an isolated, easily accessible test point. The connection has high mechanical strength and vibration resistance. The socket contact and corresponding component lead may be soldered to the circuit board by conventional means after operational testing.

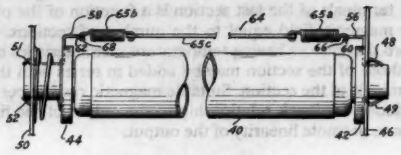
3,685,003

FLUORESCENT LAMPHOLDER

Kenneth E. Watt, 1424 Wilson Ave., Lima, Ohio

Filed Aug. 20, 1970, Ser. No. 65,635
Int. Cl. H01r *33/12*
U.S. Cl. 339—56 R **7 Claims**

The fluorescent lampholder includes a first compressible end for receiving one end of the lamp and a second fixed end for receiving the other end of the lamp. Mounting clips are provided on each of the lamp-holding ends to secure each of the ends in a base panel. Extension tabs are joined to mounting clips on the compressible end and on the fixed end. The tabs are adapted to receive and support a grounding wire or spring for the fluorescent lamp therebetween.

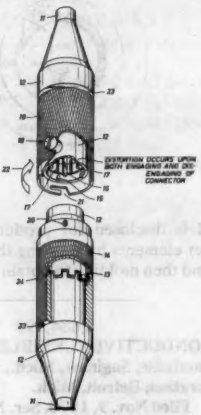


3,685,004

UNDERWATER PRESSURE BREAK CONNECTOR

Wayne L. Kerr, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,860
Int. Cl. H01r *13/52, 13/54*
U.S. Cl. 339—61 M **9 Claims**



An illustrative embodiment of the present invention includes an underwater cable connector comprised of inner and outer members. The inner member is provided with a protrusion at one point on its circumference and is made of a flexible material such as rubber. The protrusion on the inner member extends through a hole in the outer member which is a metal housing surrounding the inner member of the connector. When the outer housing is rotated, pulled upon, or pushed upon, the inner flexible member deforms when the protrusion encounters the outer housing. This causes the seal about the inner member to be broken and enables the connector to be taken apart under pressurized conditions.

3,685,005

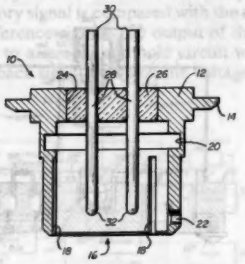
HERMETICALLY SEALED CONNECTOR

Franklin M. D'Alessandro, Chicago, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed July 22, 1969, Ser. No. 843,644
Int. Cl. H01r *13/40*
U.S. Cl. 339—136 **7 Claims**

A hermetically sealed electrical connector capable of operation in temperatures from −55° to 225° C. As disclosed, it comprises an outer shell of light weight aluminum alloy, sur-

rounding copper contacts extending through a glass insulator supported within the shell; the shell, the insulator, and the contacts being made from materials having specified coeffi-



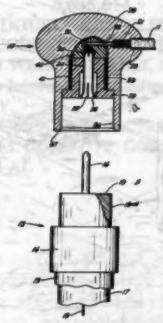
cients of thermal expansion and yield strength effective to avoid destruction of the integrity of the seal by thermal expansion and contraction.

3,685,006

CABLE CONNECTOR

Paul Jerrold-Jones, Claremont, Calif., assignor to Beckman Instruments, Inc.

Filed June 24, 1970, Ser. No. 49,457
Int. Cl. H01r *17/06*
U.S. Cl. 339—177 R **9 Claims**



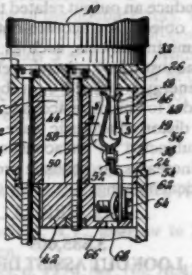
A method and means for connecting a multi-conductor electrical cable to an electrode assembly having inner and outer electrically conductive connectors, comprising a socket cap molded from an electrically conductive material, the socket cap including a bore, the electrode assembly adapted to extend into the bore with the outer connector thereof electrically contacting the wall of the cap in the bore. The cable is imbedded within the socket cap with a first of the conductors thereof in electrical contact therewith whereby the first conductor electrically contacts the outer connector via the socket cap. A connector pin is electrically connected to a second of the conductors of the cable, the connector pin being positioned within and aligned with the axis of the bore in the cap whereby the connector pin contacts the inner connector of the electrode assembly. A piece of shrink tubing is utilized to cover and insulate the second conductor and the connector pin from the cap and the first conductor.

3,685,007

GROUNDING ELECTRICAL CONNECTOR

George A. Riley, Bridgeport, and Albert J. Gartland, Jr., Trumbull, both of Conn., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Dec. 28, 1970, Ser. No. 101,454
Int. Cl. H01r *13/50*
U.S. Cl. 339—189 R **10 Claims**



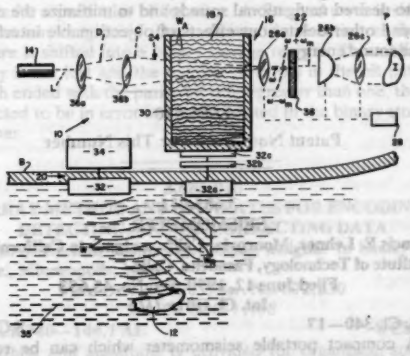
The female connector device of an electrical connector is provided with a common contact spring assembly arranged for receiving and contacting male blades of different design for keying purposes. The spring assembly includes a pair of spring members interconnected at one end and separable from each other at the other end which together define a void inward from the separable end which permits free movement of key projections on the male contact. This void is created by providing at least one of the spring members with a V-shaped portion and a transition area in which it changes from its V-shape into a flat section where it is connected to the other spring member which carries the binding screw and binding plate. The transition area of the V-shaped spring member defines the void or clearance between the spring members so as to provide a space to clear the key projections of differently designed male blades.

3,685,008

ACOUSTO-OPTICAL ECHO IMAGING METHOD AND APPARATUS

Pravin G. Bhuta, Torrence, and Robert Aprahamian, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 29, 1969, Ser. No. 829,000
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **17 Claims**



An acousto-optical echo imaging method and apparatus for examining objects, particularly submerged objects and the interior of objects which are optically opaque. The object to be

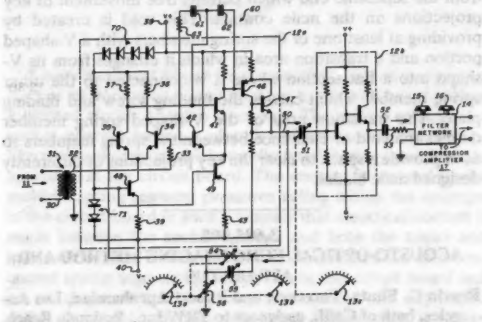
examined is acoustically coupled to an acoustic source of fixed frequency and to an acoustic wave transmission medium in a manner such that acoustic wave energy from the source is transmitted to the object and then reflected from the object to the acoustic medium to produce within the medium distorted acoustic waves containing information defining an image of the object. This acoustic wave information is transformed to equivalent light information by a light-sound wave interaction yielding refracted light rays which may be magnified to produce an observable image of the object or otherwise processed to produce an output related to the acoustic characteristics of the object. An acousto-optical method and apparatus for examining objects, such as soil, characterized by relatively high acoustic loss, wherein relatively low frequency acoustic wave energy is utilized to probe the object under examination in order to minimize acoustic attenuation within the object, and the distorted acoustic wave energy emerging from the object is subjected to an acoustic wave reconstruction process which increases the acoustic probe frequency suitable for acousto-optical imaging.

3,685,009

LOOKOUT ASSIST DEVICE

Robert F. Fleming, Jr., Charlottesville, Va., assignor to Sperry Rand Corporation

Filed June 19, 1970, Ser. No. 49,438
Int. Cl. H04b *11/00*
U.S. Cl. 340—16 R **11 Claims**



A hearing lookout assist device improves the contrast between meaningful marine navigation sounds and the ship's background noise sound, such as own ship bow wake and machinery noise. The frequency response of the listening device is arranged to maximize response of the lookout's hearing to desired navigational sounds and to minimize the masking and other deleterious effects of objectionable interfering noise sound energy.

3,685,010

Patent Not Issued For This Number

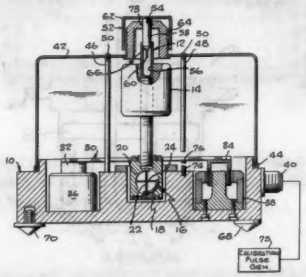
3,685,011

SEISMOMETER

Francis E. Lehner, Monrovia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed June 12, 1970, Ser. No. 45,653
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **8 Claims**

A compact portable seismometer which can be readily leveled and set up in the field, comprising a pivotally mounted arm with a hollow outer end, and a stop that can be screwed into and out of the hollow end to prevent or allow arm pivoting, as well as providing a limit to the range of oscillations. A pair of windows in the housing, through which the arm can be observed, is covered as the stop is screwed down to prevent arm pivoting and is uncovered as the stop is screwed up to allow pivoting, thereby protecting the windows from dirt. The



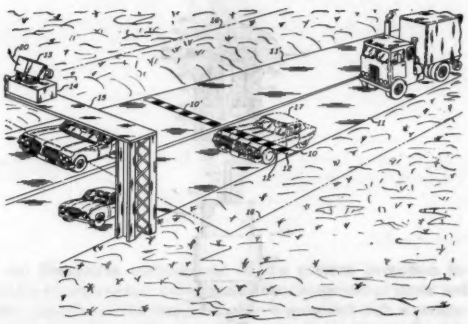
arm is about as wide as the windows so that when a flashlight is shone into one window, movement of the arm to its central position, prevents any light from being seen at the other window, thereby facilitating set-up at night.

3,685,012

APPARATUS FOR DETERMINING DATA ASSOCIATED WITH OBJECTS

John S. Case, Hauppauge, and Edwin W. Whitfield, Great Neck, both of N.Y., assignors to Sperry Rand Corporation

Filed April 16, 1970, Ser. No. 29,189
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 P **27 Claims**



Apparatus for determining data associated with objects such as vehicular traffic on a roadway. An alternating pattern comprising colinearly arranged contrasting portions adjacent each other is disposed on the surface of the roadway. A television camera is disposed above the roadway for scanning the traffic on the roadway as well as the pattern which may be partially obscured by the vehicles. The video pulses resulting from scanning the pattern are processed to determine the data associated with the vehicles.

3,685,013

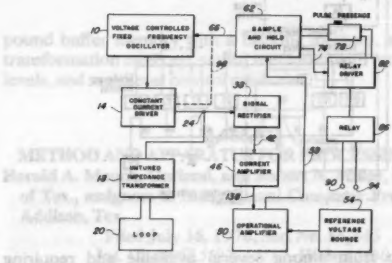
SELF-ADJUSTING VEHICLE DETECTOR SYSTEM

Joseph L. Brickner, c/o Precision Winding Company, Inc., 2247 S. Grand Ave., Santa Ana, Calif.

Filed Aug. 14, 1970, Ser. No. 63,670
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 L **8 Claims**

In this vehicle detector system a fixed frequency oscillatory signal produced by a voltage controlled, fixed frequency oscil-

latory signal source is passed to an untuned circuit including an inductive loop. A vehicle moving over the inductive loop will vary the inductance and the loading of the loop, and thus will vary the voltage amplitude of the oscillatory signal, which is rectified and amplified, and passed to an amplitude comparator circuit by means of which the amplitude of the rectified oscillatory signal is compared with the amplitude of a fixed voltage reference signal. The output of the comparator circuit is passed to a sample and hold circuit which provides the voltage feedback signal by which the voltage amplitude of

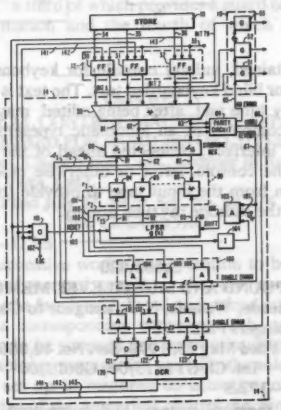


the output of the oscillatory signal source is controlled. The sample and hold circuit also provides the input signal to the output relay driver amplifier. The sample and hold circuit produces output relay actuating signals in response to the rapid change of comparator output signals produced by the moving of a vehicle into position over the inductive pickup loop, but does not produce output relay actuating signals in response to slowly occurring events, such as the drifting of the parameters of the pickup loop due to moisture, changes in temperature, etc.

3,685,014
AUTOMATIC DOUBLE ERROR DETECTION AND CORRECTION DEVICE

My-Yue Hsiao, and Wadie F. Mikhail, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,553
Int. Cl. G06f *11/12*; G08c *25/00*
U.S. Cl. 340—146.1 AL **16 Claims**

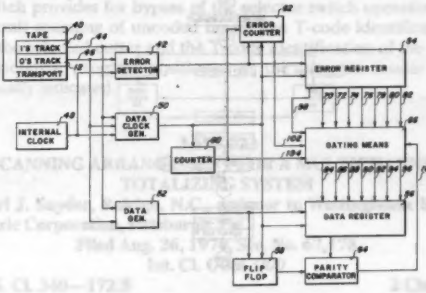


A method and apparatus are provided for detecting and correcting double errors and detecting triple errors by generating syndrome S bits from check bits and data bits of a binary word. The syndrome S bits themselves are decoded to locate and correct single errors. Code bit combinations h_1, h_2,–h_n which indicate the location of the single errors are compared with the syndrome S bits by successive half add operations to produce successive results R_1, R_2,–R_n. If double errors occur in the binary word, the syndrome S bits reflect the double error by the relationship $S = h_i \vee h_j$. When i compare or half add operations are performed, the result R_i yields a discrete combination of code bits which indicates the location of one of the double errors because $R_x = S \vee h_i = h_j$. Then h_j is decoded to correct one of the double errors. When one of the double errors is corrected, a new set of syndrome S bits is generated, and this yields $S = h_i$. The syndrome S bits are decoded next to correct the second error in the binary word. Thus double errors occurring in bits i and j of the binary word are detected and corrected.

3,685,015
CHARACTER BIT ERROR DETECTION AND CORRECTION

Robert P. Bocek, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1970, Ser. No. 78,428
Int. Cl. G06f *11/08*; G06k *5/00*
U.S. Cl. 340—146.1 F **4 Claims**



Method and apparatus for detecting and correcting single bit errors in a bit pattern recorded on a two-track magnetic recording medium, the bit pattern including a parity bit. The bits corresponding to binary ones are recorded as flux transitions on one track and the bits corresponding to binary zeros are recorded as flux transitions on the other track. An error is defined if a flux transition is not detected in both tracks for a particular bit location or if flux transitions are detected in both tracks for a particular bit location. A detected error is shifted into an error register at the associated bit location as the bit pattern is shifted into a binary storage register. If established parity is not lost and the number of errors in the bit pattern which ended with the parity bit is not greater than one, the bit detected to be in error is complemented in the binary storage register.

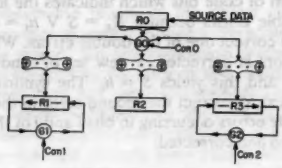
3,685,016
ARRAY METHOD AND APPARATUS FOR ENCODING, DETECTING, AND/OR CORRECTING DATA

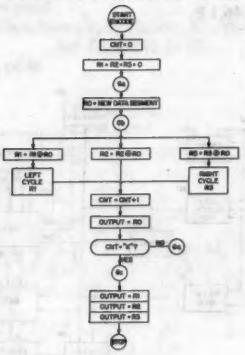
Joseph J. Eachus, Cambridge, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 29, 1969, Ser. No. 872,230
Int. Cl. G06f *11/08*
U.S. Cl. 340—146.1 AL **8 Claims**

Method and apparatus is provided for organizing source data into k data segments of n bits each. The source data may be considered to constitute an array where each data segment is a row and the bit positions of a data segment define the columns of the array. The encoding method and apparatus

provide for generating a first series of check bits along the columns of the array as a first succession of exclusive-or functions. A second series of check bits are generated along





diagonals of the array; where a diagonal is defined as a series of adjacent positions in successive rows of the array with the direction of adjacency being the same for all diagonals.

3,685,017

Patent Not Issued For This Number

3,685,018

PROGRAM CONTROLLED DATA PROCESSING INSTALLATION FOR CARRYING OUT SWITCHING PROCESSING IN A TELEPHONE EXCHANGE

Fritz Brandt; Wolfram Ernst, both of Munich, and Dieter Voegtlen, Starnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

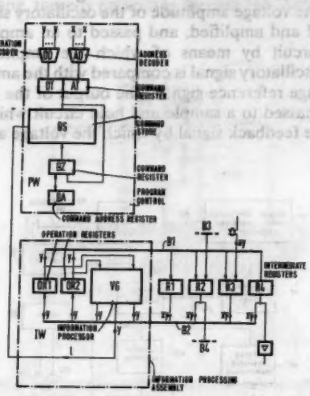
Filed March 20, 1970, Ser. No. 21,340

Claims priority, application Germany, March 21, 1969, P 19 14 576.7

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **7 Claims**

A program controlled data processing installation particularly useful with telephone exchange switching is described. The system includes an information processing mechanism which is controlled by a program control mechanism. The processing mechanism receives binary signals which are then processed and a determination of their ultimate utilization made. The system also selects the binary signals which will be



operated on from among several available and requiring operation.

3,685,019

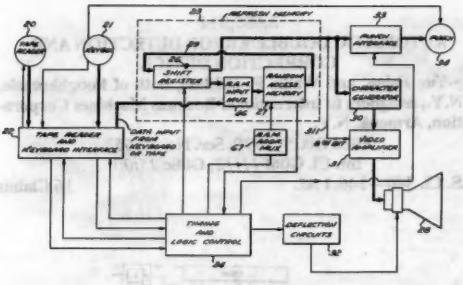
EDITING APPARATUS

Thomas P. Conroy, Satellite Beach; Walter G. Fredrickson, and Howard A. Thrailkill, both of Indialantic, all of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 14, 1970, Ser. No. 37,192

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **16 Claims**



A self-contained, unitary console for keyboard editing of wire-service or blind keyboarded text. The text is displayed on a cathode ray tube and, after being edited, may provide the input for a computer or an automatic typesetter. A "hard-wired logic" interface, connected ahead of the input to the memory in the console, strips or otherwise modifies special codes read in from the input tape to provide the desired instructions to the cathode ray tube display.

3,685,020

COMPOUND AND MULTILEVEL MEMORIES

Robert M. Meade, Wassaic, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

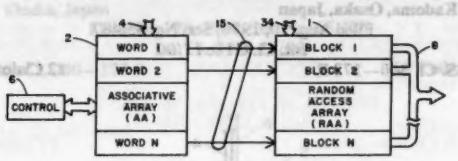
Filed May 25, 1970, Ser. No. 40,086

Int. Cl. G11c *15/00*; G06f *1/00*

U.S. Cl. 340—172.5 **9 Claims**

Multilevel memory systems and compound memories. A compound memory includes a random access array with an associative array as part of its accessing means. A match in the associative array between an effective address, identifying an addressed information block, and an associative array word

directly energizes corresponding random access array locations which contain the addressed information block. Multilevel memory systems include embodiments such as a compound buffer memory with a backing memory, a compound transformation memory, nested memories with more than two levels, and multilevel control memories.

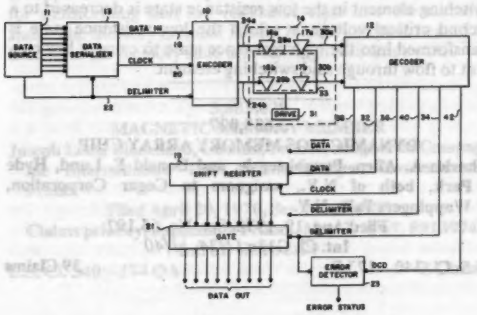


3,685,021

METHOD AND APPARATUS FOR PROCESSING DATA

Harold A. Mauch, Garland, and Robert N. Miller, Dallas, both of Tex., assignors to International Computer Products, Inc., Addison, Tex.

Filed July 16, 1970, Ser. No. 55,445
Int. Cl. G06f *5/02, 11/12*; H03r *13/00*
U.S. Cl. 340—172.5 **28 Claims**



A method and apparatus for data encoding and decoding in which a quaternary logic system is used for processing binary data. Two data channels are used to provide four combinations of data, two of which represent binary values, logic "0" and logic "1," a third of which provides a guard band between bits of information and the fourth of which is a special character.

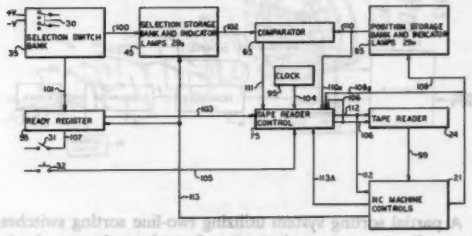
3,685,022

NUMERICAL CONTROL MACHINING APPARATUS PROGRAMMED FOR FAMILIES OF CUTTER SIZES

Burt F. Raynes, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed July 27, 1970, Ser. No. 58,274
Int. Cl. G05b *9/00*
U.S. Cl. 340—172.5 **24 Claims**

For each successive workpiece operation to be performed by a numerical control machine, the operator selects an available one of a family of full and undersized cutters and, by actuation of a corresponding console switch, causes a programmed tape to be scanned and appropriately positioned to provide a matching program for use with the selected cutter. Circuit logic set up in response to actuation of the switch prevents starting of the numerical control machining until the matching program is in the starting position on the program reader. For each operation there is a family of full sized cutter having a tool code identification T–01 and undersized cutters having tool code identifications T–02 to T–04, respectively. The programmed tape has recorded thereon for each operation, a sequence of programs, there being one program for each cutter size of the family of cutter sizes for that program. Each program includes the dimensional instructions for its cutter size together with the T-code identification of the cutter size. The programs for each family of cutter sizes and the families of programs for the sequence of machine operations are all recorded on the single tape in uninterrupted sequence



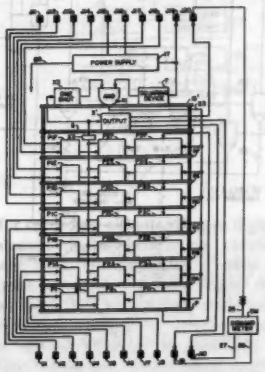
thereon. There is one console selector switch for each of the full and undersized cutters in the family of cutters, and actuation of any one permits the tape scanning operation to begin upon actuation of a "SCAN" switch. An "ON-OFF" console switch provides for bypass of the selector switch operation to permit scanning of uncoded tapes. The T-code identification of the selected cutter and the T-code identification of the corresponding program positioned at the program reader are visually indicated.

3,685,023

SCANNING ARRANGEMENT FOR A MULTICHANNEL TOTALIZING SYSTEM

Carl J. Snyder, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1970, Ser. No. 67,178
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **2 Claims**

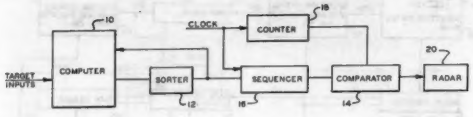


Pulses received over a plurality of channels are stored in storage devices. These storage devices are scanned rapidly for the purpose of detecting the presence of stored pulses. When a stored pulse is encountered, it is read out to generate an impulse at an output pulse device that is supplied to a receiver and the scan continuation is delayed for a time sufficient to assure operation of the receiver.

3,685,024
TWO STAGE SORTING SYSTEM USING TWO-LINE SORTING SWITCHES

Daniel G. O'Connor, Endwell, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,888
Int. Cl. G06f 7/24
U.S. Cl. 340—172.5 11 Claims

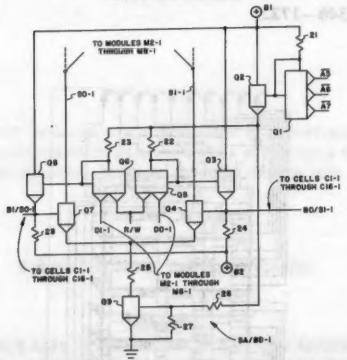


A partial sorting system utilizing two-line sorting switches for applications where the order of numbers changes slowly with respect to sorting frequency. By using only two stages of sorting and making sorting passes at a relatively high frequency, large reductions in required hardware are obtained while still having a completely sorted output during the major portion of normal system operation.

3,685,025
SENSE AMPLIFIER/BIT DRIVER FOR SEMICONDUCTOR MEMORIES

Richard W. Bryant, 131 Rochdale Road, Poughkeepsie, N.Y., and George K. Tu, 2 Dana Place, Wappingers Falls, N.Y.

Filed June 25, 1970, Ser. No. 49,631
Int. Cl. G11c 7/00
U.S. Cl. 340—173 FF 13 Claims

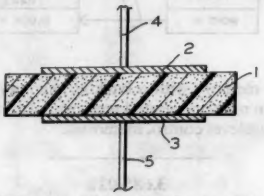


A combined, differentially operated sense amplifier and bit driver circuit for a semiconductor memory system which requires only a single decoder. The state of a selected cell is sensed depending upon the relative polarities of the signals on a pair of sense/drive conductors extended to a group of cells. A bit is written in a selected cell by energizing a selected one of the same two conductors. The same polarity decoder output signal causes the sense amplifier/bit driver circuit to operate in either the read or write mode depending upon the state of a read/write conductor extended to the circuit.

3,685,026
PROCESS OF SWITCHING AN ELECTRIC CURRENT

Takashi Wakabayashi, and Shiro Hozumi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed Aug. 20, 1970, Ser. No. 65,487
Int. Cl. G11c 11/00
U.S. Cl. 340—173 R 12 Claims

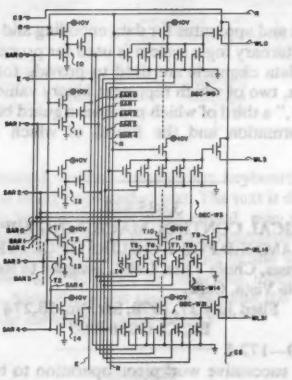


A process of switching an electric current. A switching element is provided which has finely divided conductive particles dispersed in resin, and which has a high resistance state and a low resistance state. A voltage is applied across said switching element in the high resistance state and is increased up to a first critical voltage to transform the high resistance state into the low resistance state to cause a high current to flow through said switching element. The voltage applied across said switching element in the low resistance state is decreased to a second critical voltage at which the low resistance state is transformed into the high resistance state to cause a low current to flow through said switching element.

3,685,027
DYNAMIC MOS MEMORY ARRAY CHIP

Charles A. Allen, Poughkeepsie, and Donald F. Lund, Hyde Park, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,197
Int. Cl. G11c 11/24, 11/40
U.S. Cl. 340—173 R 39 Claims



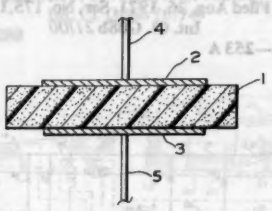
A dynamic MOS memory array chip is disclosed which utilizes four-device cells. During the refresh cycle, all of the bit/sense line pairs are gated to a charging potential and all of the word lines are pulsed simultaneously so that all cells in the array can be refreshed together. The refresh pulse level applied to all of the word lines is lower than the select pulse level applied to any one of the word lines during a read or write operation.

3,685,028

PROCESS OF MEMORIZING AN ELECTRIC SIGNAL

Takashi Wakabayashi, and Shiro Hozumi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 20, 1970, Ser. No. 65,488
Int. Cl. G11c *11/00*
U.S. Cl. 340—173 R 12 Claims



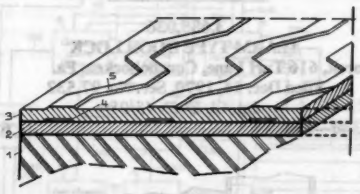
A process of memorizing an electric signal. A memory element is provided which has finely divided conductive particles dispersed in resin and which has a high resistance state, a low resistance state and a memory state. An electric signal is supplied at a critical voltage to said memory element in the high resistance state for transforming said high resistance state into the low resistance state. An electric signal at a critical current is supplied to the memory element in the low resistance state for transforming said low resistance state into the memory state. The memory element in said memory state is heated to transform the memory state into said high resistance state.

3,685,029

MAGNETIC MEMORY MEMBER

Joseph Louis Blanchard, Cachan, France, assignor to Compagnie Internationale Pour L'Informatique, Louveciennes, France

Filed April 20, 1970, Ser. No. 30,068
Claims priority, application France, May 2, 1969, 6913974
Int. Cl. G11b *5/00*
U.S. Cl. 340—174 QA 5 Claims



There is disclosed an improved structure of a binary information memory member made of thin layers and comprising magnetic domain propagation channels. This member includes a first thin layer of a soft magnetic anisotropic material coated with a second layer of a hard magnetic material, and the propagation channels are defined therein by providing non magnetic metallizations patterned according to the required propagation channels between the first and the second magnetic layers of the member.

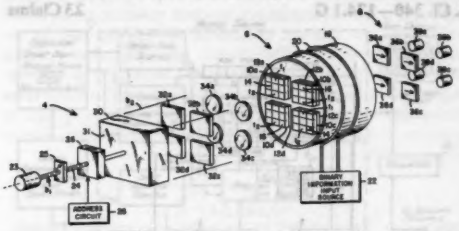
3,685,030

LIGHT BEAM PROJECTION ASSEMBLY FOR A WORD ORGANIZED OPTIC MEMORY

Norman Goldberg, 1580 Tralle Drive, Dresher, Pa.

Filed Feb. 11, 1970, Ser. No. 10,534
Int. Cl. G11c *5/02, 11/14, 11/42*
U.S. Cl. 340—174 YC 12 Claims

A light beam projection assembly comprising a light beam deflection apparatus and other apparatus which expands the cross-sectional area of the polarized light beam received from the deflection apparatus such that components of the expanded light beam can be focused simultaneously onto corresponding regions of a plurality of adjacent, coplanar, light responsive target wafers. When the target wafers are of a ferrimagnetic material having a magnetic compensation temperature, components of the expanded light beam are focused onto the corresponding regions of the wafers either to write in the regions by raising the temperature of the regions above the magnetic compensation temperature of the material or to read the information stored in the regions by observing the polarization rotation of the components of the light beam due to the presence of information stored at the regions.

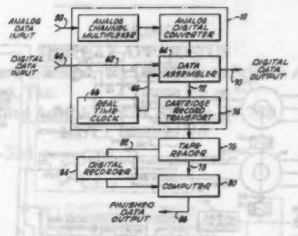


3,685,031

DIGITAL RECORDING APPARATUS

Robert A. Cook, Norman, Okla., assignor to Metrodata Systems Inc., Norman, Okla.

Filed June 2, 1970, Ser. No. 42,834
Int. Cl. G08c *19/28*; G11b *27/30*; H03k *13/02*
U.S. Cl. 340—174.1 K 11 Claims



Apparatus for recording either analog or digital input information in selected digital format on cartridge-contained endless magnetic tape. The apparatus consists of digital data conversion means for receiving input digital data, or digital data as derived from time sequentially sampled analog input data converted to digital data form. The converted digital data information is shifted through an assembly register with selected real time binary data, and removal from the assembly register takes place at clock-controlled rate in accordance with predetermined control logic such that serial time digital data followed by successive ones of a plurality of binary coded data values for each of a plurality of input channels are recorded sequentially on the magnetic tape cartridge.

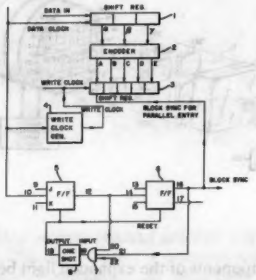
3,685,032

Patent Not Issued For This Number

3,685,033
BLOCK ENCODING FOR MAGNETIC RECORDING SYSTEMS

Keshava Srivastava, Waltham, Mass., and Ashok K. Agrawala, Roseville, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 24, 1970, Ser. No. 66,199
Int. Cl. G11b 5/06; H03k 13/258; H04l 3/02
U.S. Cl. 340—174.1 G 23 Claims

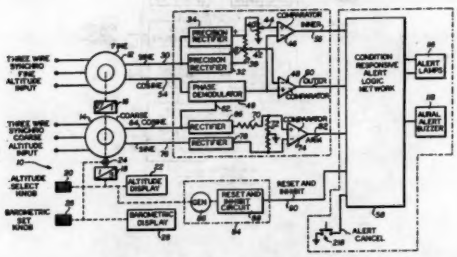


This specification discloses a high density recording and reproducing system wherein the effective packing density is increased by a generalized code which increases the number of bits per transition on the recording medium. The data is encoded in blocks so that n bits of information are transmitted with an allowed $(2n-1)$ bits so that the total number of reversals in the recording medium is a minimum.

3,685,034
ALTITUDE ALERTING APPARATUS

Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.

Filed Sept. 27, 1970, Ser. No. 67,550
Int. Cl. G08b 21/00; G08c 19/48; G08g 5/00
U.S. Cl. 340—181 14 Claims

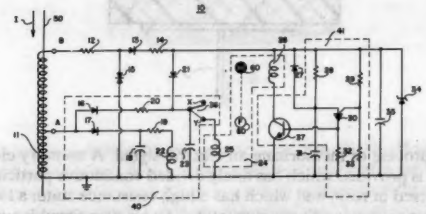


An indication of altitude variation about a preselected altitude is provided from a real time altitude information input signal in response to an altitude alert control signal which is proportional to a pair of complementary sinusoidal functions, sine and cosine, of the altitude variation. The uncorrected altitude information and the preselected altitude information are both fed to fine and coarse transolvers which each provide the sine and cosine functions of the angular equivalent of the altitude variation. The relative magnitudes of these sinusoidal functions are compared to provide the alert control signal. The fine cosine signal is phase demodulated with the coarse cosine signal as a reference and the relative magnitude thereof compared with the relative magnitude of the fine sine signal in order to provide both an inner and an outer alert control signal for a logic network. The relative magnitudes of the coarse sine and cosine signals are also compared to provide an arming signal for the logic network. The logic network is responsive to the alert control signals to control both an aural and a visual alarm.

3,685,035
FAULT INDICATING APPARATUS

James E. McClain; Arcus F. Parks, and Howard L. Scott, all of Greenville, Tex., assignors to Esco Manufacturing Company, Greenville, Tex.

Filed Aug. 26, 1971, Ser. No. 175,116
Int. Cl. G08b 21/00
U.S. Cl. 340—253 A 9 Claims

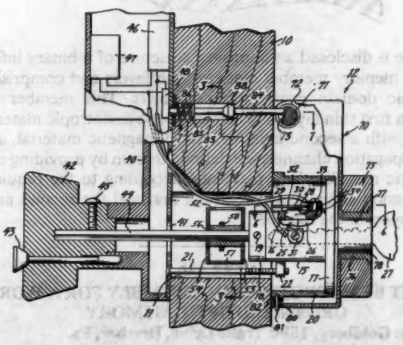


Disclosed is fault indicating apparatus responsive to normal and excessive current associated with an external circuit conductor being monitored, the fault indicating apparatus including an indicator for providing a visual indication of the normal or fault current condition in the external circuit conductor, a fault responsive network portion for selectively switching current through a fault winding associated with the indicator during excessive current flow, a reset network portion for selectively providing current pulses through a reset winding associated with the indicator during normal current flow, the reset network including a relaxation oscillator for periodically triggering a transistor switch into conduction for providing the current pulses to the reset coil, a diode-capacitor network operatively responsive to the excessive current through the monitored conductor for controllably disabling the relaxation oscillator during the fault cycle, the fault indicator apparatus automatically providing a visual indication of the normal or fault condition of the monitored conductor.

3,685,036
ALARM TYPE DOOR LOCK

Frank Torok, 616 Turf Lane, Conshohocken, Pa.

Filed Dec. 14, 1970, Ser. No. 97,532
Int. Cl. E05b 45/08
U.S. Cl. 340—274 6 Claims



An alarm type door lock wherein a cylinder lock is provided with a pair of axially aligned separately rotatable cylinder lock plugs for simultaneously receiving a single key, and switch

means is operatively associated with at least one of the plugs for closure in an intermediate position of an inserted key.

3,685,037

ALARM SYSTEM FOR BUSINESS MACHINES

Anthony B. Bennett, 25 E. 86th St., New York, N.Y., and Aladar Heppes, 234 Great Hill Rd., Ridgefield, Conn., assignor to said Bennett by said Heppes

Filed Oct. 6, 1970, Ser. No. 78,385
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **10 Claims**

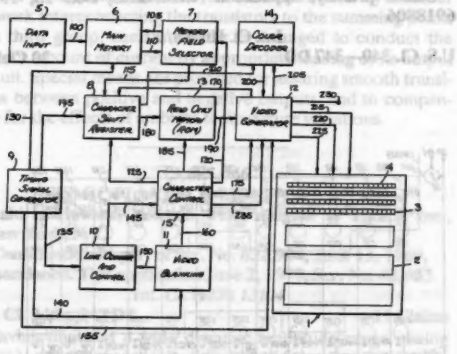
An alarm system for protecting business machines and the like against theft, which includes a casing for location on a base support such as a desk or the like, for containing the components of the alarm system, and for supporting the machine to be protected. The alarm becomes operative upon (1) unauthorized removal of the machine from the alarm containing casing; or (2) unauthorized removal of the machine, together with the alarm containing casing from the base support.

3,685,038

VIDEO DATA COLOR DISPLAY SYSTEM

Michael J. Flanagan, Bedford, Mass., assignor to Viatron Computer Systems Corporation, Bedford, Mass.

Filed March 23, 1970, Ser. No. 21,669
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **6 Claims**



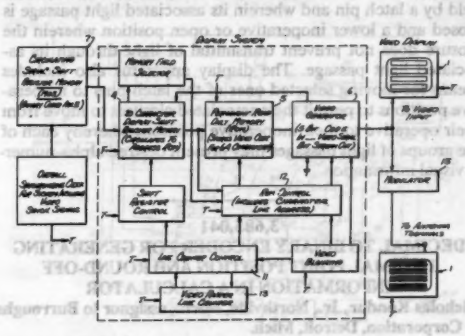
A data color display system is disclosed which will display groups of characters in color on a background in color. The shapes or outlines of the different characters which are available for display are predetermined by the hard wiring of a read only memory, but the selection of the particular characters to be displayed is left to be specified by input data to the system. The color display system is adapted to store input digital data and to process it digitally so as to provide video signals synchronized with the raster of a raster-type color monitor whereby desired colored characters on a colored background are formed. In one mode, the input data determines the colors of the characters and character backgrounds. In another mode, the colors of four types of characters are predetermined by hard wiring.

3,685,039

VIDEO DATA DISPLAY SYSTEM

Michael I. Flanagan, Bedford, Mass., assignor to Viatron Computer Systems Corporation, Bedford, Mass.

Filed April 9, 1969, Ser. No. 814,534
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**



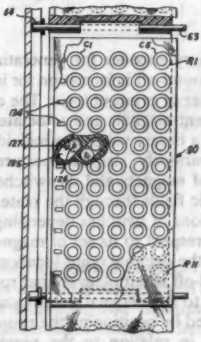
A data display system is disclosed utilizing a conventional television receiver for selectively displaying groups of characters comprising stored data and particularly data of the general type and quantity conventionally recorded on the usual computer punch cards. The video display system is adapted for transferring data already recorded or being recorded in a memory storage unit to the television antenna terminals or video inputs of a monitor without requiring any modification of the receiver or monitor. The display system operates with a master clock or timer circuit which facilitates the read out and conversion of the information from the coded memory data to a video bit stream. The master clock provides standard synchronizing signals for the video display and these same signals also are used to synchronize the several subcircuits utilized in the data transfer from a data memory to the video display.

3,685,040

DISPLAY APPARATUS

Richard T. Hart, Garland, Tex., assignor to Science Associates, Inc., Garland, Tex.

Filed April 13, 1970, Ser. No. 27,790
Int. Cl. G07f *11/16*
U.S. Cl. 340—334 **18 Claims**



A display apparatus having a plurality of horizontally extending panels pivotally connected to form an endless belt, the belt of panels being movable in a closed path having a front vertical view portion, each of the panels having a plurality of

longitudinally spaced groups of light passages, each group of passages being arranged in horizontal rows and vertical columns, from lamps positioned behind the panels when they are in the front view portion of their paths of movement for transmitting light through the light passages, each of the light passages having a closure operatively associated therewith and movable between an upper operative position wherein it is held by a latch pin and wherein its associated light passage is closed and a lower inoperative or open position wherein the closure does not prevent transmittal of light through its associated light passage. The display apparatus also includes means for moving selected ones of the latch pins to inoperative positions to permit their associated closures to move from their operative to their inoperative positions whereby each of the groups of light passages may present desired alpha-numeric visual information.

3,685,041

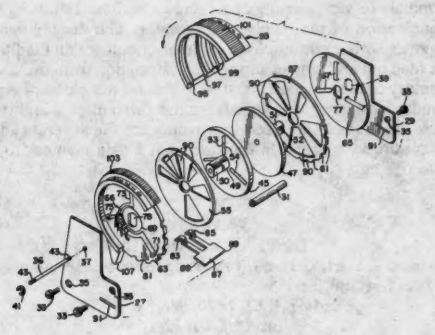
DECIMAL TO BINARY ENCODER FOR GENERATING DECIMAL POINT POSITION AND ROUND-OFF INFORMATION IN A CALCULATOR

Nicholas Kondur, Jr., Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1970, Ser. No. 36,589

Int. Cl. G08c *9/04*

U.S. Cl. 340—347 D **6 Claims**



A decimal to binary encoder for generating both decimal point position and round-off information for instructing calculator memory register or printout logic. The encoder includes two sets of permanent magnets and associated reed switches, each switch having a binary value. An individual coded shunt plate containing variously shaped apertures is interposed between each set of magnets and its switches for permitting patterns of magnetic fields through the plate, thereby closing different combinations of switches depending on the position of each plate with respect to its set of magnets and switches. The positioning of the decimal point location shunt plate also positions the round-off shunt plate so that round-off is always made with respect to the decimal point location. The round-off setting is effected by positioning the round-off set of magnets and switches in relation to the previously positioned round-off shunt plate.

3,685,042

Patent Not Issued For This Number

3,685,043

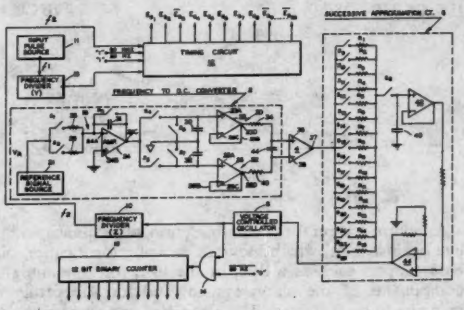
PULSE TRAIN TO DIGITAL CONVERTER

Henry R. Kosakowski, Lyndhurst, N.J., assignor to The Bendix Corporation

Filed Sept. 25, 1970, Ser. No. 75,508

Int. Cl. G08c *13/00*; **H03k** *5/18, 13/14*

U.S. Cl. 340—347 DD **5 Claims**



A pulse train to digital converter including improved frequency multiplying means whereby the multiplication is virtually unrestricted in magnitude and is a closed loop function for improving accuracy and stability of the converter.

3,685,044

SIGNAL SENSING ARRANGEMENT

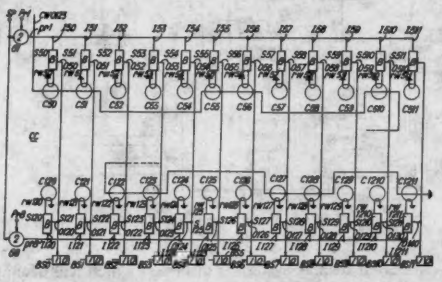
Luciaan H. E. Van Heddegem, Edegem, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,470

Claims priority, application Netherlands, Dec. 15, 1969, 6918806

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD **20 Claims**

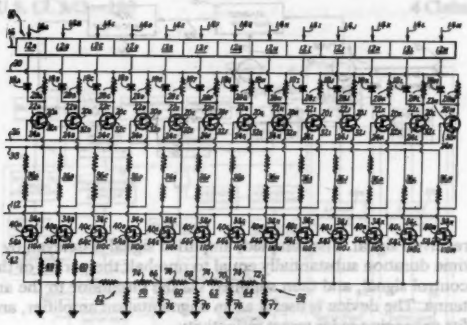


A signal sensing arrangement in a code translator for distinguishing signals at first points from noise caused by these signals at other points by gating the signals in gating circuits via a strobe pulse generator. Each of the first points is coupled to a separate gate via a shaping circuit designed to improve the signal-to-noise ratio. The strobe pulses are coupled to the other inputs to the gate circuits. The arrangement is capable of distinguishing between signal and noise even if the peak amplitudes of both occur substantially at the same time and/or the signal amplitude experiences rapid fall-off after peaking.

3,685,045
DIGITAL-TO-ANALOG CONVERTERS

James J. Pastoriza, Lincoln, Mass., assignor to Analog Devices, Inc., Cambridge, Mass.

Filed March 24, 1969, Ser. No. 809,700
Int. Cl. H03k *13/04, 13/25, 17/00*
U.S. Cl. 340—347 DA 32 Claims



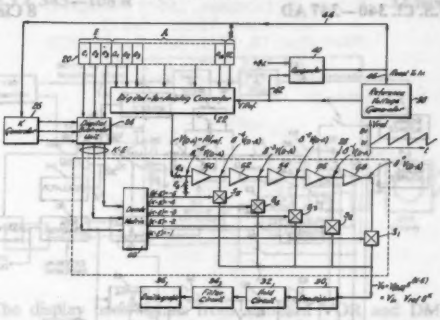
A digital-to-analog converter utilizing a set of high-speed current switches each comprising a buffer transistor and a switching transistor interconnected with a common resistor in such a fashion that the buffer transistor in the normal "off" state supplies the common resistor with a current of predetermined magnitude to bias the switching transistor to cut-off; a control pulse coupled through an input diode cuts off the buffer transistor, the bias at the switching transistor is thereby eliminated, and the switching transistor immediately conducts. The magnitude of current supplied to a summing point by each switching transistor is fixed in accordance with a weighted relationship determined by the order of the binary bit represented by the respective transistor; for one group of switching transistors, the current levels are determined by current-dividing networks individual to each transistor; in a second group, the current levels are determined by a ladder network interconnecting the transistors to the summing point; in a third group, each transistor is arranged to conduct the correct amount of current by appropriate loading of its output circuit. Special means are provided for assuring smooth transitions between positive and negative outputs, and to compensate for the effects of ambient temperature variations.

3,685,046
SEISMIC PLAYBACK/MONITOR SYSTEM

Donald L. Howlett, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 832,904, June 13, 1969, abandoned. This application June 2, 1970, Ser. No. 42,653
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA 11 Claims

Having digitized a wide dynamic amplitude range analog signal V_{in} and recorded it in digital word from comprising a binary coded mantissa A and a binary coded exponent E, where A and E are related to a constant radix or base (e.g., the decimal number 8) the present invention provides methodology and apparatus for converting A and E to an analog signal V_o of compressed dynamic amplitude range for the purpose of making playbacks in the form of oscillograms therefrom. As initially recorded in digital form the digital word is, mathematically, $V_{in}=\pm A8^{-E}$ equation 1. According to one illustrative embodiment of the invention, in reconverting the digitally recorded A and E data to obtain the desired analog signal V_o, digital signals representing A are converted to an analog signal $V_{(D-A)}=AV_{ref}$ equation 5 where V_{ref} is a periodic function of time t. Digital signals representing the E data are processed to provide a signal representative of a new exponent (K–E) where K is changed by a predetermined magnitude each time V_{ref} attains a predetermined magnitude. Analog signal $V_{(D-A)}$ is delivered to an arrangement of cascaded amplifier stages, each of which has a gain of 8. The signal (K–E) gates the amplified $V_{(D-A)}$ signal through a particular stage of said amplifier arrangement to yield the analog signal $V_o=V_{(D-A)}8^{(K-E)}$ equation 6 which can also be stated as $V_o=V_{in}V_{ref}8^K$ equation 7.

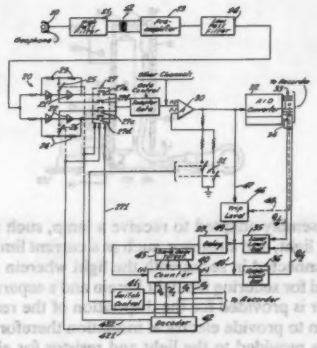


Also, in accordance with the invention various forms of programmed gain control may be introduced in that a time varying gain function G(t) is applied to V_{ref}. Moreover, in accordance with another aspect of the invention a form of automatic gain control is introduced by enabling signal V_o to control the rate of gain expansion.

3,685,047
SEISMIC AMPLIFIERS

Paul Sherer, Marina Del Rey, and Phillip C. Halverson, Fullerton, both of Calif., assignors to SDS Data Systems, Inc., Santa Monica, Calif.

Division of Ser. No. 537,386, March 25, 1966, Pat. No. 3,525,948. This application July 31, 1970, Ser. No. 60,068
Int. Cl. H03r *13/02*
U.S. Cl. 340—347 AD 19 Claims



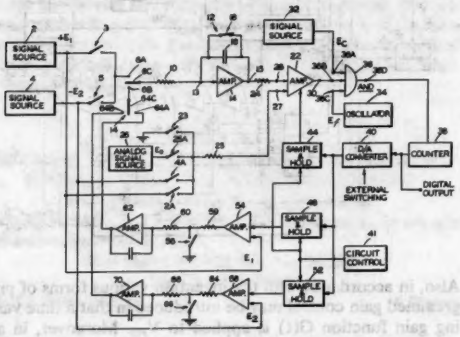
A system forming a digitized representation of an analog signal ranging over a wide DB range which incorporates a preamplifier, a post amplifier, and digitizer. The digitizer is limited to a maximum input voltage. The amplifier circuitry connected to the digitizer is switched in gain level to precondition the signal for the digitizer. A gain control circuit for the amplifier forms a digitized value representative of system gain. The output of the system is a floating point representation of the analog signal having a sign bit, a digitized mantissa, and a gain level code in digital form.

3,685,048

SELF-CALIBRATING ANALOG TO DIGITAL CONVERTER WITH PREDETERMINED TRANSFER CHARACTERISTICS

Ralph M. Pincus, Paramus, N.J., assignor to The Bendix Corporation

Filed Sept. 30, 1970, Ser. No. 76,956
Int. Cl. H03k 13/04
U.S. Cl. 340—347 AD 8 Claims



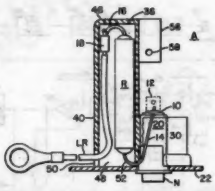
An analog to digital converter having self-calibrating capability throughout its range at every desired point and including means for providing an analog to digital transfer function with variable offset and slope.

3,685,049

INDICATOR LIGHT-RESISTOR MOUNTING ASSEMBLY

Ralph B. Immel, and James D. Collins, both of Buffalo, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 25, 1970, Ser. No. 22,641
Int. Cl. G08b 21/00
U.S. Cl. 340—381 7 Claims



An assembly adapted to receive a lamp, such as a neon indicating light, and a resistor, such as a current limiting resistor, to be connected in series with the light wherein a chamber is provided for securing the light herein and a separate insulating chamber is provided for the disposition of the resistor in such a fashion to provide electrical insulation therefor and wherein access is provided to the light and resistor for electrical connection to external circuitry.

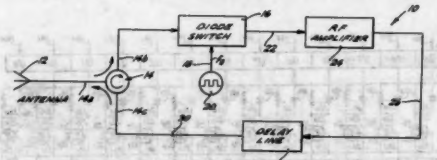
3,685,050

SINGLE ANTENNA SIGNAL RETRANSMISSION DEVICE

Victor F. Cartwright, Fullerton, Calif., assignor to Cartwright Engineering, Inc., Fullerton, Calif.

Filed April 13, 1970, Ser. No. 27,538
U.S. Cl. 343—18 B 14 Claims

A device for receiving a signal via an antenna and for retransmitting via the same antenna an augmented signal of identical frequency and coherent phase. A circulator connected to the antenna directs the received signal to a diode switch and thence to a broadband RF amplifier. The switch periodically, alternately isolates and passes the received signal to the amplifier in response to a square wave control signal having a frequency considerably lower than that of the



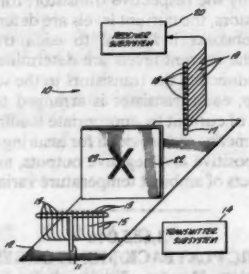
received signal. The sampled, amplified signal is delayed by a time duration substantially equal to one-half the period of the control signal, and then supplied via the circulator to the antenna. The device is useful as an augmentation amplifier, and for enhancing radar target reflectivity.

3,685,051

HOLOGRAPHIC IMAGING SYSTEM USING CROSSED LINEAR ARRAYS OF ENERGY SOURCES AND SENSORS

Willard H. Wells, Altadena, Calif., assignor to Tetra Tech, Inc., Pasedena, Calif.

Filed March 6, 1969, Ser. No. 804,744
Int. Cl. G01s 9/00, 9/02
U.S. Cl. 343—17 11 Claims



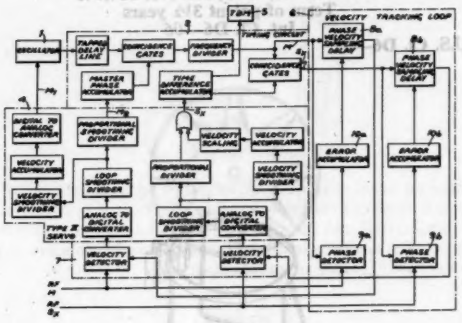
An improved and simplified energy propagation and detection system for forming a hologram of an object illuminated with coherent acoustic or radio energy. Coherent wave energy incident on and modified by the object is received and detected at a hologram plane. Photographic film used in conventional optical holography to record interference patterns at the hologram plane is not useful with acoustic or radio energy, and other types of sensors or receivers must therefore be used. In the past, a two-dimensionally scanned receiver or a grid of many fixed receivers has been used at the hologram plane to map energy intensity and phase, and to provide signals from which an optical hologram is constructed. The new system uses a single linear array of receivers in combination with either a single energy source which is mechanically scanned in one dimension, or a linear array of sources oriented transversely to the array of receivers. A major reduction in the total number of sources and receivers is achieved to permit economical mapping of a large hologram plane with resolution adequate for underwater object detection and similar applications.

3,685,052

METHOD OF IMPROVING DYNAMIC PERFORMANCE OF A TRACKING LOOP FOR USE IN A MOBILE RECEIVER

James P. Van Etten, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 25, 1970, Ser. No. 49,686
Int. Cl. G01s 1/24
U.S. Cl. 343—103 4 Claims



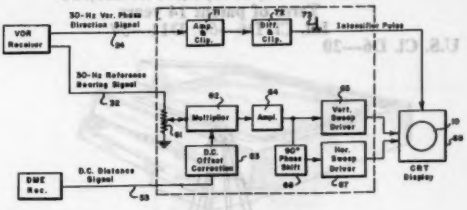
This is a method and apparatus for improving the dynamic performance of a tracking loop for use in a pulse navigation mobile radio receiver. The receiver receives a signal having a contaminated and an uncontaminated portion. The uncontaminated portion is sampled to establish a stable reference point for determining the navigation position, and the contaminated portion is sampled at a point in time with respect to the stable reference point. The sampled contaminated portion is then used to correct the navigation position error due to dynamic shifts in the location of the receiver.

3,685,053

AREA NAVIGATION DISPLAY, PARTICULARLY FOR AIRCRAFT

George M. Kirkpatrick, Syracuse, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,762
Int. Cl. G01s 1/50
U.S. Cl. 343—106 R 3 Claims

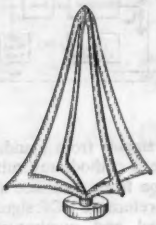


The display uses signals from standard VOR and DME receivers to produce a cathode-ray tube (CRT) display of distance and direction from a surface station. The constant amplitude sinusoidal reference VOR signal is multiplied by the DME distance signal and quadrature signals produced therefrom to deflect the CRT beam in a circular path synchronized with the reference signal and having a radius proportional to distance. The VOR variable phase direction signal is amplified, clipped and differentiated to yield intensifying pulses for the CRT display at an angle representing the direction of the aircraft from the surface station. If desired, the VOR variable phase direction signal could be multiplied by the DME distance signal to produce the circular path, if means are provided to hold the amplitude of the variable phase signal constant, and the reference VOR signal used to generate intensifying pulses.

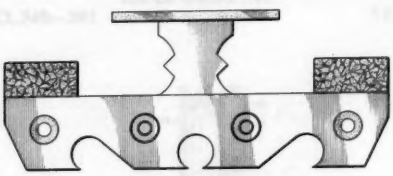
DESIGNS

AUGUST 15, 1972

224,610
DISPLAY STAND OR SIMILAR ARTICLE
Delmar R. Dustman, 18077 Matthews, Riverview, Mich. 48192
Filed Mar. 18, 1971, Ser. No. 125,923
Term of patent 14 years
Int. Cl. D6—*06;* D11—*04*
U.S. Cl. D6—20

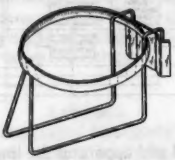


224,611
COMBINED GAME TABLE AND SEATING UNIT
Caine Turner and Connie Marie Turner, both of 9434 Bandera, Los Angeles, Calif. 90002
Filed Sept. 21, 1970, Ser. No. 25,108
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—45

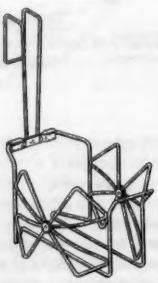


224,612
CHAIR
Arthur F. Yuenger, Box 2656, Aspen, Colo. 81611
Filed Nov. 27, 1970, Ser. No. 26,186
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

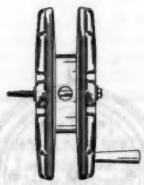
224,613
STORAGE RACK FOR TOILET TISSUE OR THE LIKE
George Shaw, Fresh Meadows, N.Y., assignor to Wire World, Inc., Bronx, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,745
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D6—97



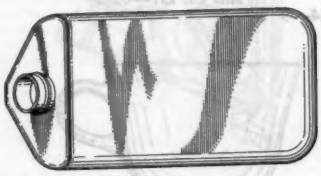
224,614
STORAGE RACK FOR TOILET TISSUE OR THE LIKE
George Shaw, Fresh Meadows, N.Y., assignor to Wire World, Inc., Bronx, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,743
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D6—97



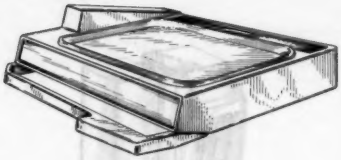
224,615
HOSE REEL
Vernon R. Kloefkorn, 4205 SE. 17th St., Edmond, Okla. 73034
Filed Jan. 11, 1971, Ser. No. 105,780
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—222

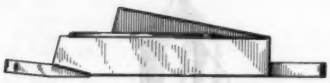


224,616
LIQUID CONTAINER
Warren J. Schieser, Columbus, and Jere C. Marsh, Worthington, Ohio, assignors to The Corrugated Container Company, Columbus, Ohio
Filed May 7, 1971, Ser. No. 141,453
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175

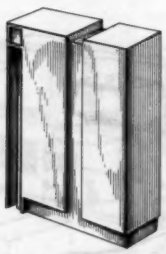


224,617
DENTAL TRAY
John M. Gardella, Matawan, N.J., Anthony Ciavattoni, Staten Island, N.Y., and Earl E. Hoyt, Northvale, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 10, 1971, Ser. No. 151,998
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1

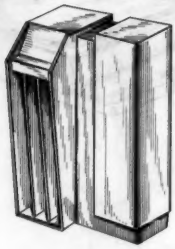




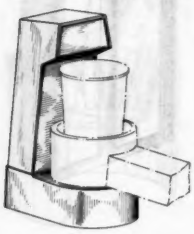
224,618
CABINET FOR A DENTAL UNIT
John M. Gardella, Matawan, N.J., Anthony Ciavattoni, Staten Island, N.Y., and Earl E. Hoyt, Washington Township, Westwood County, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 10, 1971, Ser. No. 151,999
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



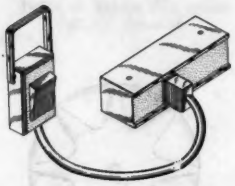
224,619
CABINET FOR A DENTAL UNIT
John M. Gardella, Matawan, N.J., Anthony Ciavattoni, Staten Island, N.Y., and Earl E. Hoyt, Northvale, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 10, 1971, Ser. No. 152,000
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



224,620
DENTAL CUP FILLER
John M. Gardella, Matawan, N.J., Anthony Ciavattoni, Staten Island, N.Y., and Earl E. Hoyt, Northvale, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 10, 1971, Ser. No. 152,001
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



224,621
COMBINED CONTROL PANEL AND SWITCH
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Feb. 3, 1971, Ser. No. 112,517
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

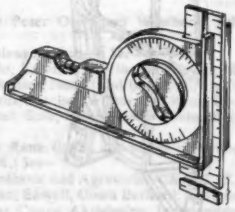


224,622
CLOCK
Carl-Gerhard Wennermo, 22 Nygatan, 71300 Nora Stad, Sweden
Filed Apr. 28, 1971, Ser. No. 138,400
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

224,623
CUP OR THE LIKE
Charles B. Ketcham, Horseheads, and Theodore M. Reyda, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Aug. 11, 1970, Ser. No. 24,423
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9

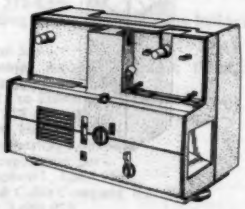
224,624
VACUUM CLEANER OR SIMILAR ARTICLE
David K. Walz, Stone Mountain, Ga., and Robert C. Lagerstrom, Anderson, S.C., assignors to The Singer Company, New York, N.Y.
Filed Dec. 31, 1970, Ser. No. 26,721
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—14.1

224,625
COMBINED TRY AND MITER SQUARE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, Sheffield, England
Filed Oct. 5, 1970, Ser. No. 25,321
Claims priority, application Great Britain Apr. 17, 1970
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



224,626
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to General Mills, Inc.
Filed Jan. 11, 1971, Ser. No. 105,779
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

224,627
MOTION PICTURE PROJECTOR
Sadao Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 23, 1971, Ser. No. 127,435
Claims priority, application Japan Nov. 26, 1970
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1

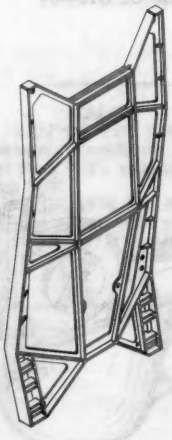


224,628
FLAGMAN'S SAFETY PADDLE
Bernard D. Lamb, 4316 S. A St., Tacoma, Wash. 98408
Filed Jan. 28, 1971, Ser. No. 110,801
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1

224,629
PHOTOELECTRIC INTRUSION DETECTOR UNIT
William G. Kahl, Jr., Brookfield, Conn., assignor to Arrowhead Enterprises, Inc., Bethel, Conn.
Filed Feb. 4, 1971, Ser. No. 112,575
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1

224,630
INSTRUMENT CARRIER
Albert R. Casavant, Box 1124, Chattanooga, Tenn. 37401
Filed Mar. 24, 1971, Ser. No. 127,863
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1

224,631
BACK PACK FRAME
Lowell H. Morris, Dixon, Calif., assignor to Morris Manufacturing Company, Dixon, Calif.
Filed Nov. 11, 1971, Ser. No. 198,073
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—5



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF AUGUST, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Bovard, Robert M., 3,684,712.

A/S Raufoss Ammunisjonsfabrikker: *See—*
Johnsen, Leif, 3,684,820.

Abakumov, Vladimir Borisovich: *See—*
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.

Abbott Laboratories: *See—*
Martin, Jerry Roy, 3,684,794.

Abbott, Norman Basil; and Chapman, Charles Brian, to Imperial chemical Industries Limited. Thermally reversible polyester polyurethanes. 3,684,769, Cl. 260-75.0nk.

Abe, Hisao; and Tatsumi, Masanori, to Toray Industries, Inc. Process for recovering styrene and xylenes from cracked oil by extractive distillation with a dialkyl acetamide. 3,684,665, Cl. 203-9.000.

Abe, Shigeo; and Takayama, Kenichiro, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-threonine. 3,684,653, Cl. 195-28.00r.

Abelle, Thomas G.: *See—*
Einerson, Amos M.; Schauer, Frank N.; and Abelle, Thomas G., 3,684,400.

Abronson, Charles J.: *See—*
Cotter, John J.; and Abronson, Charles J., 3,684,983.

Achler, Howard S.; and Kaufmann, Harold. Universal urethane die assembly and method of and apparatus for using same. 3,683,735, Cl. 83-374.000.

Acker, Norbert Karl. Apparatus for reading randomly positioned data. 3,684,867, Cl. 235-61.11e.

Acme Manufacturing Company, Inc.: *See—*
Herrett, Wilfred H., 3,683,829.

Adams, Duane J., to Martin-Marietta Corporation. Wideband balanced current probe. 3,684,955, Cl. 324-72.000.

Adams, Lawrence R.; and Kamentsky, Louis A., to Bio/Physics Systems, Inc. Method for analysis of blood by optical analysis of living cells. 3,684,377, Cl. 356-36.000.

Adcole Corporation: *See—*
Cole, Addison D., 3,683,932.

Addressograph Multigraph Corporation: *See—*
Van Acker, John J.; and Zimmer, Robert E., 3,684,941.

Addressograph-Multigraph Corporation: *See—*
Gray, Donald R.; and Miller, Donald J., 3,683,803.

Adler, Stanford L.; and Klemm, Kai. Automatic apparatus and method for determining the packed cell volume of whole blood. 3,684,450, Cl. 23-230.00b.

Adret-Electronique Vladimir Komarov Trappes: *See—*
Charbonnier, Roger Charles, 3,684,982.

AEG-Elotherm GmbH: *See—*
Reinke, Friedhelm; and Frisch, Karl, 3,684,851.

AEG-Elothm G.m.b.H.: *See—*
von Starck, Axel, 3,684,402.

Aereon Corporation: *See—*
Kukon, John P.; and Putman, William F., 3,684,217.

AGA Aktiebolag: *See—*
Granqvist, Carl-Erik, 3,684,375.
Lilljeforss, Gustaf Lennart, 3,683,703.
Unger, Hans Peter Olof; and Westberg, Johan Eric Hayden, 3,684,160.
Unger, Hans Peter Olof; and Westberg, Johan Eric Hayden, 3,684,161.

Agfa-Gevaert Aktiengesellschaft: *See—*
Pelz, Willibald; Kabitzke, Karlheinz; Freytag, Karl-Heinz; Vetter, Hans; Danhauser, Justus; and Bockly, Erich, 3,684,513.
Psaar, Hubertus; Puschel, Walter; and Raue, Roderich, 3,684,510.
Schulte, Walter; Boie, Immo; Mader, Helmut; and Otto, Rigobert, 3,684,515.
Weyde, Edith; Ranz, Erwin; and Matejec, Reinhart, 3,684,511.

Agrawala, Ashok K.: *See—*
Srivastava, Keshava; and Agrawala, Ashok K., 3,685,033.

Ahlberg, Erik Johan; Ekwall, Gosta Berhard; and Lingquist, Rolf Artur Ronald, to Atlas Copco Aktiebolag. Independently rotated pneumatic rock drill. 3,684,033, Cl. 173-105.000.

Ahlers, Egon, to Seitz-Werke G.m.b.H. Entraining means for the crown corks used in connection with bottle closing machines. 3,683,588, Cl. 53-64.000.

Ainsworth, Wm., Inc.: *See—*
Smith, James E.; Borgogno, Victor E.; and Luehr, Robert E., 3,684,875.

Aisin Seiki Company Limited: *See—*
Kawabe, Tsuneo; and Takeshita, Hiroshi, 3,684,329.

Aisin Seiki Kabushiki Kaisha: *See—*
Kito, Masahiro, 3,684,330.

Akai Electric Co., Ltd.: *See—*
Homma, Ku, 3,684,839.

Akeley, Lloyd T., to Beckman Instruments, Inc. Reverse-acting relay valve. 3,683,968, Cl. 137-625.660.

Akron Standard, division of Eagle-Picker Industries Inc.: *See—*
Homa, George D.; Kindy, Ronald J.; and Miller, Earl D., 3,684,877.

Aktiebolaget Bofors: *See—*
Jacobson, Gunnar; and Olsson, Olof Bertil, 3,684,215.
Johansson, Arnold Johannes, 3,684,383.

Aktiebolaget Electrolux: *See—*
Eber, Nicolas, 3,683,640.

Aktiebolaget Tudor: *See—*
Nilsson, Ove K-G, 3,684,950.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Hofer, Franz; and Schuler, Claus, 3,684,499.
Kalverboer, Cornelis, 3,683,620.

Akwell Industries Incorporated: *See—*
Stepp, Wendell H., 3,684,643.

Aladdin Industries, Incorporated: *See—*
Bridges, John A., 3,684,123.

Albright & Wilson Limited: *See—*
Dear, William Noel; Ramsay, James Ian; and Thomson, Alexander, 3,684,436.

Aldo, Bruce D.: *See—*
Koehler, Paul J.; and Aldo, Bruce D., 3,684,623.

Alessi, Samuel P.; and Daneck, David A., to Borg-Warner Corporation. Medical traction device. 3,683,900, Cl. 128-75.000.

Alexandre, Philippe. Constant downstream level gate. 3,683,630, Cl. 61-25.000.

Ali, Frank F. Finishing tool. 3,683,567, Cl. 51-358.000.

All-Steel Equipment Inc.: *See—*
Swanquist, Wesley W., 3,684,230.

Allaud, Louis A., to Schlumberger Technology Corporation. Method and apparatus for thermometric well logging. 3,683,688, Cl. 73-154.00.

Allen, Charles A.; and Lund, Donald F., to Cogar Corporation. Dynamic mos memory array chip. 3,685,027, Cl. 340-173.00r.

Allen, Wilbur G. Automatic processor. 3,683,781, Cl. 95-94.00r.

Allied Chemical Corporation: *See—*
Bonfield, John Henry, 3,684,432.
Chandrasekaran, Swayambu, 3,684,786.
Scheirer, David E.; and Klingelhoefer, William Christian, 3,684,434.
Wortham, Joseph S., 3,684,518.

Allied Industrial Components: *See—*
Perry, Dean A., 3,684,939.

Allied Thermal Corporation: *See—*
Hedrick, Warren R., 3,683,786.

Alliegro, Richard A.; and Learned, Addison W., III, to Norton Company. Composite ceramic armor with metallic support strip. 3,683,828, Cl. 109-83.000.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Hermansson, Bo; and Hansson, Curt, 3,684,945.
Von Krusenstierna, Otto, 3,683,622.

Allstar Verbrauchsguter GmbH & Co. KG: *See—*
Krusche, Kurt; and Zimmermann, Hubert, 3,683,443.

Alpha, Smith, to Silver Liming, Inc., mesne. Completion fluid. 3,684,709, Cl. 252-8.55r.

Alten, Kurt. Sealing device for openings in buildings. 3,683,572, Cl. 52-173.000.

Amano, Yasuhiko: *See—*
Matsui, Toshiji; Amano, Yasuhiko; Hotta, Yoshitsugu; and Mitabe, Tsutomu, 3,683,784.

Ambler, Allan R., to Stewarts and Lloyds Limited. Expansible tools. 3,684,149, Cl. 228-444.000.

Amchem Products, Inc.: *See—*
Curran, John Patrick, 3,684,588.

Amerace Esna Corporation: *See—*
Flamagan, Robert I., 3,684,985.

American Chain & Cable Company, Inc.: *See—*
Giles, James, 3,684,073.

American Crucible Products Company, The: *See—*
Rice, Patricia A., 3,683,600.

American Cyanamid Company: *See—*
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American Flange & Manufacturing Co., Inc.: *See—*
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American Flange & Mfg. Co., Inc.: *See—*

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American International Corporation: *See*—
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American Standard Inc.: *See*—
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American Sterilizer Company: *See*—
Kereluk, Karl; and Lloyd, Robert S., 3,684,660.

Ametek, Inc.: *See*—
Hottendorf, William J., 3,684,627.

AMF Incorporated: *See*—
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AMP Incorporated: *See*—
Fritz, William Baird; Sanders, Neil Harrison; Reyner, Emerson Marshall, III; and Fox, Harry Alvin, Jr., 3,683,494.

Anaconda Aluminum Company: *See*—
Kuniansky, Raymond L., 3,683,555.

Analog Devices, Inc.: *See*—
Pastoriza, James J., 3,685,045.

and; and Kirkpatrick, Melvin Douglas, to Union Carbide Corporaon, mesne. Apparatus and method for making seed tape and the resulting seed tape. 3,683,582, Cl. 53-28.000.

Anderes, Erwin: *See*—
Koerbel, Hans; and Anderes, Erwin, 368,424,666.

Andersen-Vie, Axel E., to Ryersen & Haynes, Inc. Scissors jack. 3,684,243, Cl. 254-122.000.

Anderson, Albert E.; and Disch, Ellis V. Simulated leather laminate and its preparation. 3,684,637, Cl. 161-64.000.

Anderson, Edgar L.; and Schneier, Michael L., to Sybron Corporation. Control apparatus for washer-sterilizer. 3,683,944, Cl. 134-57.00r.

Anderson, Forrest Symington, to Anderson Mavor Limited. Haulage mechanism for mining machines. 3,684,067, Cl. 192-4.00r.

Anderson, George F., to AMF Incorporated. Constant ratio throttle control. 3,683,716, Cl. 74-491.000.

Anderson, Glenn R., to Minnesota Mining and Manufacturing Company. Duplicating device and method utilizing heat building in an enclosed stack of sheets. 3,683,807, Cl. 101-426.000.

Anderson, James D. Hide removal apparatus and method. 3,683,455, Cl. 17-50.

Anderson, John H., Jr., to Intercontinental Dynamics Corporation. Variable time constant altitude rate device. 3,683,690, Cl. 73-179.000.

Anderson Mavor Limited: *See*—
Anderson, Forrest Symington, 3,684,067.

Anderson, Robert F. Portable grilling apparatus. 3,684,087, Cl. 206-47.00r.

Anderson, Stanley R.; Bryant, Richard W.; and Tu, George K., to Cogar Corporation. Dynamic MOS memory array timing system. 3,684,897, Cl. 307-208.000.

Andres, Rudolf: *See*—
Wilfert, Karl; and Andres, Rudolf, 3,683,717.

Andrzejak, Sigmund L.; Orehoski, Michael A.; and Shapland, James T., to United States Steel Corporation. Apparatus for introducing gas to hot metal in a bottom-pour vessel. 3,684,267, Cl. 266-38.000.

Anglo Paper Products Limited: *See*—
Logan, Kenneth C., 3,683,983.

Angus, George, & Company Limited: *See*—
Ball, Eric, 3,684,602.

Anheuser-Busch, Incorporated: *See*—
Katz, Edward; Ehrenthal, Irving; and Scallet, Barrett L., 3,684,574.

Anikanov, Nikolai Ivanovich: *See*—
Duckhinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; and Grachev, Leonip Palovich, 3,683,586.

Anker, Charles A.; and Burchill, Phyliss I. Process of preparing fibrous protein products. 3,684,522, Cl. 99-17.000.

Ankrum, Homer R. Display device. 3,683,532, Cl. 40-358.000.

Anner, Georg; and Kalvoda, Jaroslav. Process for preparing 18-cyano-pregnane compounds. 3,684,674, Cl. 204-158.00r.

Anstalt Europaische Handelsgellschaft: *See*—
Nyberg, Sture, 3,683,513.

Anti-fouling sinker assembly for fishing lines: *See*—
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Appenzeller, Valentin: *See*—
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,683,649.

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Aprahamian, Robert: *See*—
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Arai, Haruhiko; and Horin, Shoji, to Kao Soap Co., Ltd. Adhesive composition for gummed tape. 3,684,749, Cl. 260-8.000.

Archer, Sydney; and Schulenberg, John W., to Sterling Drug Inc. Hexahydropyrazinoisoquinolines. 3,684,813, Cl. 260-268.0tr.

Arey, William F.; Hamner, Glen P.; Mason, Ralph B.; and Rigney, James A. Dewaxing process wherein relatively small pore size crystalline aluminosilicate zeolites are used to chemically convert n-paraffins in hydrocarbon oils. 3,684,691, Cl. 208-59.000.

Argabright, Perry A.: *See*—
Presley, C. Travis; and Argabright, Perry A., 3,684,011.

Argabright, Perry A.; and Depuy, Charles H. Method of preparing isocyanurates. 3,684,807, Cl. 260-248.0ns.

Armadillo Manufacturing Company: *See*—
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Armand, Joseph Marcel: *See*—
Jones, Richard Norman; Armand, Joseph Marcel; and Hull, Nadeau, 3,683,978.

Armco Steel Corporation: *See*—
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Armistead, Fontaine C.: *See*—
Paull, Peter L.; and Armistead, Fontaine C., 3,683,629.

Armstrong Cork Company: *See*—
Sensenig, Darryl L.; and Shaub, Robert I., Jr., 3,684,630.

Arneson, Howard M., to Arneson Products, Inc. Swimming pool chlorinator. 3,684,460, Cl. 23-267.00a.

Arneson Products, Inc.: *See*—
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Artemenko, Anatoly Ivanovich; Geshtenkern, Rafail Yakovlevich; and Yagupov, Igor Nikolaevich, to Vsesojuzny Nauchno-Issledovatelsky Institut Gorno-Spasatelnogo Dela. Medical splint apparatus. 3,683,902, Cl. 128-89.00r.

Arthur, Gene M., to Clevite Corporation. Shock absorbing device for draft gear. 3,684,271, Cl. 267-152.000.

Arthur, Ralph P.; and Belden, Mary Joanne, to Borg-Warner Corporation. Method of releasing soil in fabrics. 3,684,568, Cl. 117-139.400.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
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Uno, Naoyuki; and Tokutomi, Seijiro, 3,684,917.

Asahi Stereorama Co., Ltd.: *See*—
Yin, Law Chi, 3,684,370.

Ashijawa Iron Works Co., Ltd.: *See*—
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Ashley, Kenneth, to Hymatic Engineeng Company Limited, The. Rechargeable gas cleaners. 3,683,596, Cl. 55-359.000.

Ashton, William B.: *See*—
Coleman, Richard L.; Cummins, Billy H.; and Ashton, William B., 3,684,684.

Ashton, William H.; and Russell, Robert S., to Johnson & Johnson. Talc beneficiation. 3,684,197, Cl. 241-26.000.

Astra Lakemedel Aktiebolag: *See*—
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Atchley, Raymond D.; Pegram, John B.; and Dixon, Kenneth K., to Dixon, K., Corporation. Coating apparatus. 3,683,849, Cl. 118-50.000.

Athena Controls, Inc.: *See*—
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Ati, Inc.: *See*—
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Atlantic Richfield Company: *See*—
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Atlas Chemical Industries, Inc.: *See*—
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Atlas Copco Aktiebolag: *See*—
Ahlberg, Erik Johan; Ekwall, Gosta Berhard; and Lingquist, Rolf Artur Ronald, 3,684,033.

Audia, Samuel W., to Torrington Company, The. Pattern wheel with hinged jack. 3,683,645, Cl. 66-50.00a.

Audrichron Company, The: *See*—
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Automated Manufacturing Systems, Inc.: *See*—
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Automatic Control Systems, Inc.: *See*—
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Autotrol Corporation: *See*—
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Avant Incorporated: *See*—
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Avco Corporation: *See*—
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Avon Products, Inc.: *See*—
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Awater, Albert: *See*—
Meisert, Ernst; Awater, Albert; Muhlhausen, Cornelius; and Dobereiner, Uwe, 3,684,770.

Ayers, Ray R., to Shell Oil Company. Barge based skimming system for oil slicks. 3,684,095, Cl. 210-242.000.

Babic, Anthony T. Trowel device. 3,683,761, Cl. 94-45.00a.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
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Baecker, Manfred: *See*—
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Baerresen, Richard B., to Rohr Corporation. Thrust controlling apparatus. 3,684,183, Cl. 239-265.190.

Bahder, George; and Garcia, Felipe G., to General Cable Corporation. Apparatus including capacitive bridge circuit for measuring AC power losses. 3,684,958, Cl. 324-142.000.
Bahnsen, Erwin B., to Steiner America (n Corporation. Compact towel dispenser. 3,684,338, Cl. 312-38.000.
Baier, Franz: *See—*
Schmitz, Rudolf; and Baier, Franz, 3,684,608.
Baker, Donald H.; and Brickner, David R., to Sperry Rand Corporation. Compass calibrator. 3,683,668, Cl. 73-1.00e.
Baker, Larry W.: *See—*
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Baker Oil Tools, Inc.: *See—*
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Bal Graphics, Inc.: *See—*
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Baldwin, Steven: *See—*
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Ball, Donald H.; and Kawulski, Henry, to IIG Industries, Inc. Centrifugal fan with improved cut off means. 3,684,396, Cl. 415-53.000.
Ball, Eric, to Angus, George, & Company Limited. Manufacture of flexible hose pipes. 3,684,602, Cl. 156-149.000.
Baltimore Business Forming Inc.: *See—*
Wilson, Paul O., 3,683,756.
Balzers Patent und Beteligungs Aktiengesellschaft: *See—*
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Ban, Itsuki. Tape cartridge positioning apparatus. 3,684,296, Cl. 274-4.00b.
Ban, Itsuki. Tape cartirdge play control apparatus. 3,684,297, Cl. 274-4.00b.
Ban, Itsuki. Tape speed changing apparatus. 3,684,298, Cl. 274-4.00d.
Ban, Itsuki. Magnetic tape recording and reproducing apparatus using a small cycle time endless tape with movable head for replay. 3,684,840, Cl. 179-100.2ca.
Banana Conrol, Inc.: *See—*
McDonnell, Gerald F.; and Freebairn, Hugh T., 3,683,788.
Bandage Incorporated: *See—*
Meserve, Forrest Clayton, 3,683,728.
Bangor Punta Operations, Inc.: *See—*
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Tate, John E.; Borenstein, David E.; Langley, Isaac L., Jr.; and Banning, Jack A., 3,684,459.
Bannister, William W.; Pennace, John R.; and Curby, William A. Gelation of liquid hydrocarbons. 3,684,733, Cl. 252-316.000.
Barba, Diego; D'Agostino, Candido; and Liuzzo, Giuseppe. Desalination of sea or brackish water by multi-stage flash evaporation. 3,684,661, Cl. 202-173.000.
Barbacsy, Ludwig-Benno; Koerv, Peter; and Mehnert, Walter E., to Messerschmitt-Bolkow-Blohm GmbH. Method of simulating the zero voltage increase by means of measured electrical quantities. 3,684,956, Cl. 324-107.000.
Barbato, Alexander L.: *See—*
deNora, Vittorio; Meyer, Lewis M.; and Barbato, Alexander L., 3,684,543.
Barbato, Patricia J.: *See—*
deNora, Vittorio; Meyer, Lewis M.; and Barbato, Alexander L., 3,684,543.
Barber Manufacturing Company: *See—*
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Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., to Gulf Research & Development Company. Flame-retardant polyurethane compositions comprising a phosphorous-containing polyol and an aromatic carboxylic acid anhydride. 3,684,748, Cl. 260-2.aj.
Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., to Gulf Research & Development Company. Flame-retarded polyurethane compositions comprising a phosphorus-containing polyol and an aromatic carboxylic acid. 3,684,754, Cl. 260-2.5at.
Barlow, Conrad R., to Transland Aircraft, Inc. Spraying apparatus and control system therefor. 3,684,177, Cl. 239-171.000.
Barmag Barmer Mahinenfabrik Aktiengesellschaft: *See—*
Lenk, Erich, 3,684,416.
Barnes Engineering Company: *See—*
Schwarz, Frank, 3,684,996.
Barnes, Vernon M., Jr.; and White, Rudolph C., to Texaco Inc. Liquid-gas contactor. 3,684,256, Cl. 261-92.000.
Baronnet, Pierre; and Katzer, Ernst, to Knor-Bremse KG. Line coupling connector for railway vehicles. 3,684,106, Cl. 213-76.000.
Barr, Paul N.; and Gambill, Charles C., to General Motors Corporations. Fuel supply system for an internal combustion engine providing voltage compensated cranking. 3,683,871, Cl. 123-32.000.
Barrett, Edgar Whitehouse, to Morse, Robert, Corporation, Limited. Drum device printer with type wheels driven by individually removeable motors. 3,683,801, Cl. 101-99.000.
Bartholomew, George A. Method of adding oxygen containing metallic compounds to a molten metallurgical slag. 3,684,539, Cl. 106-117.000.
Bartlett, Lawrence C.: *See—*
Humphriss, Wesley D.; and Bartlett, Lawrence C., 3,684,503.
Baruffa, Olindo; and Plomb, Francis, to Mefina S.A. Sewing machine. 3,683,833, Cl. 112-258.000.
Baso, Loris. Tensioning lever luck on ski boots. 3,683,460, Cl. 24-70.0sk.
Bates, Harold M.: *See—*
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Bates, Howard E. Temple boots. 3,684,356, Cl. 351-123.000.
Batey, Robert William, to International Telephone and Telegraph Corporation. Fast setting marshmallow type confection. 3,684,528, Cl. 99-134.00a.
Battelle Development Corporation, The, mesne: *See—*
Harris, Roy M., 3,683,892.
Baudou, Antoine Joseph Georges. for ski boots and the like zC. 3,684,417, Cl. 425-119.000.
Baum, Charles S.: *See—*
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Baumann, Erwin H. Receptacle having a dividing wall. 3,684,136, Cl. 222-386.000.
Baumgartner, Werner Richard; Walker, Erich; Kaufmann, Hans Peter; and Biene, Canton, to Bulova Watch Company, Inc. Miniaturized movement for an electronic timepiece. 3,683,613, Cl. 58-238.00t.
Bauspies, Robert O., to Maes Incorporated. Feeding bowl. 3,683,861, Cl. 119-61.000.
Bautz, Josef, GmbH: *See—*
Jakobi, Wilhelm, 3,683,605.
Baxter Laboratories, Inc.: *See—*
Cayle, Theodore Cayle,; and Schleich, Hans, 3,684,710.
Bayerische Berg-Hutton-und Salzwerke AG: *See—*
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Bayles, Fred R., to LTV Electrosystems, Inc. Hydraulic control means. 3,683,749, Cl. 91-438.
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Beal, Charles B. Carrier system for delivery of an end of an elongated member to the upper gastrointestinal tract. 3,683,890, Cl. 128-2.00w.
Beam, Harry J., Jr. Hair drying apparatus for dogs and the like. 3,683,512, Cl. 34-243.000.
Beardmore, Geoffrey; and Evans, Hugh W. Methods of machining. 3,684,678, Cl. 204/192/000.
Beardsley, Jack M. Artificial stone facing construction and method therefor. 3,683,579, Cl. 52-311.000.
Beasley, Donald L., to Townsend Engineering Company. Hand operated fish skinning tool. 3,683,456, Cl. 107-67.000.
Beasley, Donald L., to Townsend Engineering Company. Means for injecting fluid into meat products and the like. 3,683,789, Cl. 99-256.000.
Beatrice Foods Co.: *See—*
Groves, Richard N., Jr.; Cain, Robert L.; and Senn, Robert F., 3,683,792.
Beaumont, Georges. Periodic gas generator. 3,683,951, Cl. 137-81.500.
Bebinger, Jack E., to Westinghouse electric Corporation. Rapid mounting system for good waste disposer. 3,684,199, Cl. 241-100.500.
Beck, Heine-Jurgen: *See—*
Schacher, Willi; and Beck, Heine-Jurgen, 3,683,618.
Beckman Instruments, Inc.: *See—*
Akeley, Lloyd T., 3,683,968.
Jerrold-Jones, Paul, 3,685,006.
Beckman Instruments, Limited: *See—*
Crowe, James A.; and Krattenmacher, Willi, 3,683,977.
Bedall, Hans; Rentzsch, Max; and Buckey, Dieter, to Diehl. Pyrotechnical fuse with a detonator displaceable from a safe position into a live position. 3,683,814, Cl. 102-64.000.
Beeman, Everett C., to Monsanto Company. Package for dispensing measured amounts of liquid. 3,684,120, Cl. 215-100.00r.
Beese, Norman C., to International Telephone and Telegraph Corporation. Sealed beam high intensity xenon lamp with cooling structure. 3,684,908, Cl. 313-24.000.
Begleiter, Nancy, to Miner Industries, Inc. Toy vehicle with steerable drive assembly. 3,684,046, Cl. 180-26.00r.
Begovich, Charles, to General Motors Corporation. Method and apparatus for manufacturing a squirrel cage rotor. 3,683,493, Cl. 209-598.000.
Behrens, William H.: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., 3,684,088.
Bein, Georg Wilhelm. Rotating atomizer for electrostatic painting apparatus. 3,684,174, Cl. 239-15.000.
Belart, Juan, to ITT Industries, Inc. Booster system. 3,683,619, Cl. 60-54.60p.
Belden, Mary Joanne: *See—*
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Bell Telephone Laboratories, Inc.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Curtis, Hazen, III; and Tuchen, Gerd Achim, 3,684,993.
Bellinder, Alex J., to Bal Graphics, Inc. Portable and collapsible display or exhibit. 3,684,103, Cl. 211-177.000.
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Belotti, Luigi: *See—*

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Benchley, Robert, Jr. Navigational aid comprising two mirrors for reverse direction observation. 3,684,380, Cl. 356-138.000.

Bendix Corporation, The: *See—*
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Pincus, Ralph M., 3,685,048.

Bennett, Anthony B.; and Heppes, Aladar, said Heppes, assor. to said Bennett, Anthony B. Alarm system for business machines. 3,685,037, Cl. 340-280.000.

Bennett, George Henry: *See—*
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Benson, John F.; and Shern, Daniel R., to Procter & Gamble Company, The. Apparatus for adjusting the center distance between bearing support members. 3,684,332, Cl. 308-60.000.

Benson, Robert W.; and Reed, Robert G., to Cutters Machine Company, Inc. Cloth feed control for spreading machine. 3,684,273, Cl. 270-31.000.

Bentley, George L.; and Roe, Jonas L., to Santa Cruz Aggregates Co. Liquid filter for removing fine clay particles and the like. 3,684,098, Cl. 210-374.000.

Benz, Mark G.; and Martin, Donald L., to General Electric Company. Heat-aged sintered cobalt-rare earth intermetallic product and process. 3,684,593, Cl. 148-102.000.

Berg, Lorne D.; and Rymes, John E., to Mannix Co., Ltd. Curving chute apparatus and method for positioning railroad ties. 3,683,816, Cl. 104-6.000.

Berg Ralph I.; Young, James L.; and Ulmer, Arnold G., to GAF Corporation. 355/111.000 apparatus. 3,684,373, Cl. 281/036/1/8/025.

Berger, Frank M.: *See—*
Reisner, David B.; Ludwig, Bernard J.; Bates, Harold M.; and Berger, Frank M., 3,684,805.

Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Thum, Waldemar; Gawehn, Karlfried; and Mollering, Hans. Process for the enrichment and purification of L-asparaginase. 3,684,659, Cl. 195-66.00a.

Berkey Photo, Inc.: *See—*
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Berkey/Colorteam Mfg., Inc.: *See—*
Cramer, Mert, 3,684,919.

Berkley Machine Company: *See—*
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Berlyn, Martin John. Valve actuating means. 3,683,874, Cl. 123-90.120.

Bernasconi, Ermanno: *See—*
Longi, Paolo; Valvassori, Alberto; Greco, Francesco; and Bernasconi, Ermanno, 3,684,782.

Berry, Willis E.: *See—*
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Bessman, Samuel P. Automatic digestion and dry ashing apparatus. 3,684,452, Cl. 23-253.00r.

Best, Peter; and Schweigl, Othmar Friedrich, to Lever Brothers Company. Detergent composition. 3,684,723, Cl. 252-132.000.

Bethea, Malcolm, Jr. Load determination hanger for transmission line tower. 3,684,222, Cl. 248-64.000.

Bethlehem Steel Corporation: *See—*
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Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 3,683,797.

Bettcher, Louis A., to Bettcher Industries, Inc. Food press. 3,683,797, Cl. 100-232.000.

Betts, Muus G. J.: *See—*
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Bevan, C. G., Associates Limited: *See—*
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Bevan, Christopher Graham, to Bevan, C. G., Associates Limited. Treatment of particulate material. 3,684,253, Cl. 259-29.000.

Beveridge, Thomas R.; and Ranft, Ernst L., to General Motors Corporation. Evaporation loss control. 3,683,597, Cl. 55-316.000.

Beynon, Ian L., to Champion Heaters Proprietary Limited. Gas control valve. 3,683,955, Cl. 137-495.000.

Bhuta, Pravin G.; and Aprahamian, Robert, to TRW Inc. Acousto-optical echo imaging method and apparatus. 3,685,008, Cl. 340-3.00r.

Biancifiori, Marie Antonietta: *See—*
Bordonali, Corrado; and Biancifiori, Marie Antonietta, 3,684,884.

Bibighaus, Fred W., to Superior Tube Company. Tube rolling mill for producing finned tubing. 3,683,661, Cl. .

Bickoff, Emanuel M.; Spencer, Roland R.; and Kohler, George O., to United States of America, Agriculture. Fractionation of leafy green crops. 3,684,520, Cl. 99-8.000.

Bidwell, Robert: *See—*
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Biene, Canton: *See—*
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Bieri, Leonard, Jr.: *See—*
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Bindler, Jakob; and Keller, Rudolf. Levelling polyamdie fiber dyeing with sulfonate long chain alkyl diphenyl ether and quaternized long chain alkyl ammonium alkylene oxide condensate. 3,684,426, Cl. 8-15.000.

Bio/Physics Systems, Inc.: *See—*
Adams, Lawrence R.; and Kamentsky, Louis A., 3,684,377.

Biometrics, Inc.: *See—*
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Birch, Richard W., to Richardson-Merrell Inc. Safety closure. 3,684,115, Cl. 215-9.000.

Bischof, Jose; Litzler, Alfred; Hertig, Jean; and Milicevic, Branimir, to Ciba Geigy AG. Process for after-washing freshly dyed textile material. 3,684,431, Cl. 8-137.000.

Bishop, George E.: *See—*
McCammon, William L.; and Bishop, George E., 3,684,458.

Black, Frank R., Jr.: *See—*
Flournoy, Norman E.; Eisenlohr, Gerald M.; Black, Frank R., Jr.; and Schultz, James E., 3,683,846.

Black, Stewart L.; Childers, Spencer L.; and Bieri, Leonard, Jr., to Vendo Company, The. Recirculation coffee brewer. 3,683,790, Cl. 99-289.000.

Blackburn, Marvin H.; and Corwin, Harry L., to Vernon Tool Co., Ltd. Apparatus for expanding tubes. 3,683,481, Cl. 29-202.00d.

Blake, Walter E.: *See—*
Meyerhoff, Alfred; and Blake, Walter E., 3,683,492.

Blanchard, Joseph Louis, to Compagnie Internationale pour l'Informatique. Magnetic memory member. 3,685,029, Cl. 340-174.0qa.

Bleh, Otto: *See—*
Langenhoff, Ferdinand; Termin, Erich; Bleh, Otto; and Lenz, Arnold, 3,684,433.

Bletcher, James H.; and Rauh, Jack K., 10% to the Trust of Bletcher, Ralph E.; deceased, 5% to Robertson, Frederick, 5% to Robertson, Gary, 5% to Bucknell, Lenora, 10% to Bletcher, Richard J., 5% to Liston, Marcia; trustee for Liston, Daniel E., 5% to Listn, Carol Ann, 5% to Liston, James H., 10% to Brondum, Hazel, 10% to Bletcher, Pearl, 15% to Liston, Marcia and 10% to Bucknell, Ernest H. Quick disconnect. 3,684,190, Cl. 239-428.500.

Bletcher, Pearl: *See—*
Bletcher, James H.; and Rauh, Jack K., 3,684,190.

Bletcher, Richard J.: *See—*
Bletcher, James H.; and Rauh, Jack K., 3,684,190.

Blomberg, Richard N., to Du Pont de Nemours, E. I., and Company. Chain terminated polyhexamethylene adipamide. 3,684,775, Cl. 260-78.00r.

Blumbergs, John H.; and Mac Kellar, Donald G., to FMC Corporation. Microorganism control. 3,684,477, Cl. 71-67.000.

Bocek, Robert P., to Xerox Corporation. Character bit error detection and correction. 3,685,015, Cl. 340-146.10f.

Bockly, Erich: *See—*
Pelz, Willibald; Kabitzke, Karlheinz; Freytag, Karl-Heinz; Vetter, Hans; Danhauser, Justus; and Bockly, Erich, 3,684,513.

Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., to Owens-Illinois, Inc. Fabrication of planar capillary tube structure for gas discharge panel. 3,684,468, Cl. 65-4.000.

Boden, Knut Folke Ingemar, to Elektriska Svetsningsaktiebolaget. Welding wire advancing unit. 3,684,152, Cl. 228-57.000.

Bodine, Albert G. Sonic drilling device. 3,684,037, Cl. 175-56.000.

Bodine, Winston M.: *See—*
Seitz, Charles A.; and Bodine, Winston M., 3,683,589.

Boehme, Robert M., to Honeywell Inc. Multi-channel magnetic transducer structure having full width erase head in non-magnetic housing. 3,684,841, Cl. 179-100.20c.

Boehringer Ingelheim G.m.b.H.: *See—*
Stricker, Herbert, 3,684,448.
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,684,798.

Boehringer Mannheim G.m.b.H.: *See—*
Voigt, Hans; Stoeck, Georg; Gosewinkel, Werner; and Kusch, Theodor, 3,684,573.

Bohain, Pierre: *See—*
Plumat, Emile; Bohain, Pierre; and Servais, Albert, 3,683,848.

Boie, Immo: *See—*
Schulte, Walter; Boie, Immo; Mader, Helmut; and Otto, Rigobert, 3,684,515.

Bolds Werke Photographische Gerate und Kunstoff R.: *See—*
Lange, Karl Heinz; and Enniglch, Westphalia, 3,683,774.

Bolega, Ulrich: *See—*
Schulz, Egon; Bolega, Ulrich; and Lang, Johann, 3,684,933.

Bolinger, John F., to Meridian Industries, Inc. Flasher circuit with short protection. 3,684,896, Cl. 307-202.000.

Bollinger, Luther L., Sr.: *See—*
Hennessy, James J., Jr.; and Bollinger, Luther L., Sr., 3,684,331.

Bollinger, Luther L., Sr., to Hennessy Products, Incorporated. Plug door control mechanism. 3,683,552, Cl. 49-209.000.

Bolomon, James E.; and Davis, Ialter Richard, to Motorola, Inc. Automatic gain control RF-IF amplifier. 3,684,974, Cl. 330-30.00d.

Bomstein, Ralph A. Waste treatment with microbial nucleoprotein flocculating agent. 3,684,706, Cl. 210-47.000.

Bondarev, Konstantin Timofeevich; Kozmin, Mikhail Ivanovich; Minakov, Anatoly Gavrilovich; Minin, Vladimir Ivanovich; Mitkevich, Grigory Iosifovich; and Strekalov, Anatoly Vasilievich, to Ordena Trudovogo Krasnogo Zaneni Zavody AVTOSTEKLO. Float glass appaatus for producing sheet glass crystalline material from a glass band. 3,684,475, Cl. 65-182.00r.

Bonds, Albert C., to Helical Line Products Co. Helical suspension clamp assembly. 3,684,221, Cl. 248-63.000.

Bonfield, John Henry, to Allied Chemical Corporation. Weak acid salts of hydroxylamine. 3,684,432, Cl. 423-284.000.

Bonomi, Antonio. Transport container. 3,684,122, Cl. 220-1.500.

Booker, Philip P.: *See—*
Lewis, Gerald Perley; Smyth, Robert William; Booker, Philip P.; and Zeliznak, Richard, 3,684,586.

Bordonali, Corrado; and Biancifiori, Marie Antonietta. Apparatus to be used for the analysis of traces of chemical elements through atomic absorption. 3,684,884, Cl. 250-43.50r.

Borenstein, David E.: *See—*
Tate, John E.; Borenstein, David E.; Langley, Isaac L., Jr.; and Banning, Jack A., 3,684,459.

Borg-Warner Corporation: *See—*
Alessi, Samuel P.; and Daneck, David A., 3,683,900.
Arthur, Ralph P.; and Belden, Mary Joanne, 3,684,568.
Harlin, Lester E.; and Tothero, Dwight L., 3,684,412.

Borgogno, Victor E.: *See—*
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Borsig Gesellschaft mit beschrankter Haftung: *See—*
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Bosch, Robert, GmbH: *See—*
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Boudouris, Angelo; and Gray, Geoffrey T., to Eprad Incorporated. Film tensioning device for motion picture projectors. 3,684,144, Cl. 226-114.000.

Boudouris, Angelo; and Kulish, Stanley J., Jr., to Eprad Incorporated. Apparatus for controlling theater or auditorium functions. 3,684,358, Cl. 352-25.000.

Boulanger, Henry J., to Texas Instruments, Incorporated. Pushbutton keyboard switch assembly with improved over center diaphragm contact. 3,684,842, Cl. 260-5.00r.

Bourgraf, Elroy E.; and Self, Kenneth R., to Ferno-Washington Inc. Office machine cart. 3,684,307, Cl. 280-36.00c.

Bovard, Robert M., to A-T-O Inc. Carbon dioxide absorbing chemical. 3,684,712, Cl. 252-45.00f.

Bovio, Ilario, to Olivetti, Ing. C., & C., S.p.A. Serial printing mechanism. 3,683,800, Cl. 101-93.00c.

Bowling, George W., to United States of America, Army. Apparatus for continuous emulsification. 3,684,251, Cl. 259-8.000.

Bowman, Joe; and Edwards, James D., to Scott & Fetzer Company, The. Sequential timer. 3,683,711, Cl. 74-142.000.

Boyles, Robert L.: *See—*
Polonsky, Samuel; and Boyles, Robert L., 3,683,524.

Boyles, Robert L., to General Electric Company. Digital display indicator. 3,683,523, Cl. 40-28.00c.

Bozano, Michel, to Societe Rhodiaceta. Fancy yarn, and process and device producing it. 3,683,610, Cl. 57-140.00j.

Bradford, Glenn H.; and Elewski, John S. Tool loader and unloader. 3,684,101, Cl. 211-1.590.

Bradlee, Charles R., to Textron, Inc. Multiple station forming press. 3,683,665, Cl. 72-405.000.

Bradley, William J. Tiltable headboard for beds. 3,683,430, Cl. 5-279.000.

Brandt, Fritz; Ernst, Wolfram; and Voegtlen, Dieter, to Siemens Aktiengesellschaft. Program controlled data processing installation for carrying out switching processing in a telephone exchange. 3,685,018, Cl. 340-172.500.

Brane, Ralph M.: *See—*
Levine, Morris; Brane, Ralph M.; and Hight, Roland W., 3,684,676.

Branick, Charles Earl. Pneumatic tire chuck. 3,683,981, Cl. 144-288.000.

Braski, Ervin W.: *See—*
Peltola, Waino; and Braski, Ervin W., 3,683,979.

Braun, Robert A., to Du Pont de Nemours, E. I., and Company. Polyesters with substituted amine end groups. 3,684,771, Cl. 260-77.000.

Braxton, Henry R. Elastic type dart and ball projecting device. 3,683,882, Cl. 124-20.00b.

Bray, James A.: *See—*
Smith, John R.; and Bray, James A., 3,684,679.

Bredeson, Dean K.: *See—*
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Brenden, Byron B.; and Kidman, Russell B. Ultrasonic interference pattern detector. 3,683,679, Cl. 73-67.50h.

Breslow, Ronald; Baldwin, Steven; and Winnik, Mitchell. Remote oxidation of unactivated steroid methylene groups. 3,684,801, Cl. 260-239.570.

Breston, Michael P.: *See—*
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Bret, Pierre; and Suck, Catherine, to Societe Lablabo. Valves. 3,684,195, Cl. 239-561.000.

Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, to Glaverbel S.A. Method of forming refractory masses. 3,684,560, Cl. 117-105.100.

Brickner, David R.: *See—*
Baker, Donald H.; and Brickner, David R., 3,683,668.

Brickner, Joseph L. Self-adjusting vehicle detector system. 3,685,013, Cl. 340-38.00l.

Brickner, Kenneth G.; and Ratz, George A., to United States Steel Corporation. Method for producing a minimum-ridging type 430 stainless steel. 3,684,589, Cl. 148-12.000.

Bridge Data Products, Inc.: *See—*
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Bridgeman, Cecil K., to Picker X-ray Mfg. Limited. Film pickup system. 3,684,276, Cl. 271-20.000.

Bridges, Charles D.: *See—*
Hull, John L.; and Bridges, Charles D., 3,684,016.

Bridges, John A., to Aladdin Industries, Incorporated. Stacked insulated cups. 3,684,123, Cl. 220-9.00r.

Briesofsky, Gunter, to Werkeugmaschinenfabrik Adolf Waldrich Coburg. Device for compensating the head weight on portal or cantilever type machine tools. 3,683,744, Cl. 90-11.00f.

Bright, James A.; and Wilson, Craig L., to Hathaway Instruments, Inc. Decoding system and method for generating time signals. 3,684,964, Cl. 325-58.000.

Brinckman, Eric Maria: *See—*
Van den Heuvel, Walter August; Vanhalst, Johan Eugeen; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,684,509.

British Railways Board: *See—*
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Brockway Glass Company, Inc.: *See—*
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Brondum, Hazel: *See—*
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Brooker, Leslie G. S.; and Van Lare, Earl J., to Eastman Kodak Company. Photographic emulsions containing new benzimidazole compounds as sensitizing dyes. 3,684,517, Cl. 96-128.000.

Brooks, Berry A.; and Eisdorfer, Norman R., to Johnson & Johnson. Absorbent sponges. 3,683,921, Cl. 128-296.000.

Brooks, George D. S. Golf game apparatus. 3,684,293, Cl. 273-176.00f.

Brooks, Howard Larry, to Stauffer-Wacker Silicone Corporation. Mold release compositions from mixtures of silicone resins and siloxane fluids. 3,684,756, Cl. 260-29.1si.

Brossi, Arnold; and Teitel, Sidney, to Hoffmann-La Roche, Inc. Process for 2,4-diamino-5- (3, 5-dimethoxy-4-hydroxybenzyl) pyrimidine. 3,684,810, Cl. 260-256.40n.

Brown, Henry C., to Brown Well Service & Supply Company. Well pipe string valve. 3,684,013, Cl. 176-724.000.

Brown Well Service & Supply Company: *See—*
Brown, Henry C., 3,684,013.

Brown, William H. Galvanizing continuous elements with prevention of corrosion of the pan. 3,684,563, Cl. 117-114.00a.

Brown, William M., to Ultra Products, Inc. Scaffold. 3,684,058, Cl. 182-132.000.

Brown, William R. Universal proportional differential pressure producing fluid flow device. 3,683,693, Cl. 73-212.000.

Broyles, Allen R.: *See—*
Cimbalo, Robert N.; and Broyles, Allen R., 3,684,740.

Brucher, Peter, to Borsig Gesellschaft mit beschrankter Haftung. Shaft drive for scrapers. 3,683,713, Cl. 074/243/00r.

Bruhwiler, Othmar, to Fischer, Georg, AG-Brugg. Filling withdrawing carrier for weaving machine. 3,683,971, Cl. 139-122.00n.

Brumme, Fritz. Bottle closure. 3,684,118, Cl. 215-38.00r.

Brunotte, Helen, nee Vok Kap-Herr: *See—*
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Bryant, Claudis R.: *See—*
Seifer, Paul E.; and Bryant, Claudis R., 3,683,463.

Bryant, Ellis H., Jr., to Audrichron Company, The. Apparatus for remotely changing the message of an automatic announcing machine. 3,684,834, Cl. 179-6.00e.

Bryant, Emerson C.: *See—*
Frazier, Larry C.; and Bryant, Emerson C., 3,684,621.

Bryant, Jack A., to Electronics Corporation of America. Burner control system. 3,684,423, Cl. 431-24.000.

Bryant, Richard W.: *See—*
Anderson, Stanley R.; Bryant, Richard W.; and Tu, George K., 3,684,897.

Bryant, Richard W.; and Tu, George K. Sense amplifier/bit driver for semiconductor memories. 3,685,025, Cl. 340-173.0ff.

Buchtel, Dean H.; and Maurer, John A., to Weber Dental Manufacturing Company, The. Fold-away cover for dental drinking cup support. 3,684,341, Cl. 312-209.000.

Buck, Iwar H. Thermal printing head. 3,684,858, Cl. 219-216.000.

Buckey, Dieter: *See—*
Bedall, Hans; Rentzsch, Max; and Buckey, Dieter, 3,683,814.

Bucknell, Ernest H.: *See—*
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Bucknell, Lenora: *See—*
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Buell, Bennett George, to American Cyanamid Company. Brightening polyvinyl chloride and polyolefin plastics with 2-naphthylnaphthoxazoles. 3,684,764, Cl. 260-45.8nz.

Buettner, Egon: *See—*
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Bukowiecki, Bohdan A.; and Stopczyk, Mariusz J. Method and pparatus for providing synchronized stimulus and coupled stimula-

tion from an implanted heart stimulator having a constant rhythm. 3,683,934, Cl. 128-419.00p.
Bulova Watch Company, Inc.: *See—*
Baumgartner, Werner Richard; Walker, Erich; Kaufmann, Hans Peter; and Biene, Canton, 3,683,613.
Bunas, Gary L.; and Clark, Ross P., to Memorex Corporation. Method of making vesicular film. 3,684,547, Cl. 117-34.000.
Bunker-Ramo Corporation, The: *See—*
D'Alessandro, Franklin M., 3,685,005.
Bunshodo Co., Ltd.: *See—*
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Buntin, Robert R.; Harding, John W.; Keller, James P.; and Murdock, Vollie L., to Esso Research and Engineering Company. Melt blown roving die. 3,684,415, Cl. 425-71.0.
Burchill, Phyliss I.: *See—*
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Burkholz, Herbert Carl; and Burkholz, Norman K. Outdoor imming pool with dome. 33,427, Cl. 4-172.120.
Burkholz, Herbert Carl; and Burkholz, Norman K. Outdoor swimming pool with dome. 3,683,427, Cl. 4-172.120.
Burkholz, Norman K.: *See—*
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Burkle, William C., to Hercules Incorporated. Detonator fuse initiated aqueous slurry explosive system. 3,683,809, Cl. 102-22.000.
Burman, Per Aron; Goldschmied, Sandor F.; and Sharma, Mahesh C., to Burroughs Corporation. Solder machine. 3,684,151, Cl. 228-19.000.
Burnett, Raymond S.: *See—*
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Hepner, Neal; and Williamson, Albert C., 3,683,802.
Kondur, Nicholas, Jr., 3,685,041.
Burroughs, Robert O., to Owen-Illinois, Inc. Vented two-piece closure. 3,684,119, Cl. 215-56.000.
Burrows, Robert K. Apparatus for watering animals. 3,683,956, Cl. 137-408.000.
Burton, Raymond V., Jr.; and Giachino, Eugene L., to Lockheed Aircraft Corporation. Method and means for leak detection. 3,683,675, Cl. 73-40.700.
Busby, Terence Stanley, to National Research Development Corporation. Glass furnaces. 3,684,262, Cl. 263-40.00r.
Busch, Harry. Dressing device for the dressing of profile grinding wheels. 3,683,884, Cl. 125-11.00r.
Buschmann, Gerhard, to Jagenberg-Werke AG. Apparatus for braking, overlapping and stacking sheets of material. 3,684,277, Cl. 271-46.000.
Bush, Stanley E.; Crouse, Parker E.; and Saltus, George E., to Bell Telephone Laboratories, Inc. Key telephone system having wide-band capability. 3,684,833, Cl. 179-2.0tv.
Busse, Oswald; and Kiesper, Hugo, to Passavant-Werke. Sludge thickener and method. 3,684,092, Cl. 210-73.000.
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., to Globe-Union Inc. Process and machine for manufacturing electric storage batteries. 3,684,088, Cl. 209-75.000.
Buzano, Michel. Fluid texturizing apparatus and method of use. 3,683,608, Cl. 57-77.300.
Buzano, Michel, to Societe Rhodiaceta '. Process for producing a novel textured yarn. 3,683,611, Cl. 57-157.0ts.
Buzano, Michel, to Societa Rhodiaceta. Apparatus and method for producing synthetic torque yarn. 3,683,612, Cl. 57-34.00r.
Byron Jackson, Inc.: *See—*
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Cain, Robert L.: *See—*
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Caiola, Robert J.: *See—*
Donald, Harold J.; Dewald, Carl E.; and Caiola, Robert J., 3,684,554.
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Call, Henry M.; Crain, Norman Robert; Crain, William W.; Pollit, Gary L.; and Rea, Donald E., to Documentor Sciences Corporation. Point of origin document processor. 3,684,864, Cl. 235-61.90a.
Callerame, Joseph, to Chemical Generators Inc. Chlorous acid porduction. 3,684,437, Cl. 23-152.000.
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Cameron, William M., to Mitto Rohhi Company Limited, mesne. Governor for fluid driven motor having reciprocating elements in rotor. 3,684,411, Cl. 418-15.000.
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Campanelli, Mario. Freeze stabilized insulin. 3,683,635, Cl. 62-64.000.
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Campbell, Robert L., Jr., to Automated Manufacturing Systems, Inc. Apparatus for molding hollow plastic articles. 3,683,705, Cl. 74-16.000.
Canon Inc.: *See—*
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Ito, Yoshio; Katayama, Hajime; Yamaguchi, Masaru; and Nitanda, Hiroshi, 3,684,363.
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Capek, Raymond G.; and Takahashi, Frank T., to Zenith Radio Corporation. Method of fabricating multilayer ceramic capacitors. 3,683,469, Cl. 29-25.420.
Caras, Bernard, to Burroughs Corporation. Display panel having particle source. 3,684,909, Cl. 313-54.000.
Card, Charles E., Jr.; Donovan, Daniel J.; and Sweeney, William G., to Cogar Corporation. Electronic module and cap therefor. 3,684,817, Cl. 174-52.00r.
Carl Georg Munters: *See—*
Glav, Ola, 3,683,591.
Carl, Klaus Fredrich Leonhard; and Hardtl, Karl Heinz, to U.S. Philips Corporation. Ceramic bodies for electromechanical transducer. 3,684,714, Cl. 252-62.900.
Carleton, John T., to Du Pont de Nemours, E. I., and Company. Apparatus for vacuum metallizing. 3,683,847, Cl. 118-48.000.
Carr, Norman L.; Hamilton, Harry A.; and Schagrin, Edward F., to Gulf Research & Development Company. Fractionation of light sulfur-containing hydrocarbons. 3,684,687, Cl. 208-47.000.
Carrier Corporation: *See—*
Roof, Ronald L., 3,684,170.
Carroll, Paul E., to Texas Instruments, Incorporated. Floating point amplifier. 3,684,968, Cl. 328-142.000.
Carter, George D.; Covington, Cecil E.; and Schellhase, Ernst C., to Textron Inc. Positive lock structural fastener. 3,683,988, Cl. 151-6.000.
Carter-Wallace, Inc.: *See—*
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Cartwright Engineering, Inc.: *See—*
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Cartwright, Victor F., to Cartwright Engineering, Inc. Single antenna signal retransmission device. 3,685,050, Cl. 343-18.00b.
Cary, Arthur P. Air flow system with full control elliptical vane louvers. 3,683,787, Cl. 98-40.000.
Casadio, Pietro. Flexible track for miniature electric trains. 3,684,173, Cl. 238-10.00r.
Case, John S.; and Whitfield, Edwin W., to Sperry Rand Corporation. Apparatus for determining data associated with objects. 3,685,012, Cl. 340-38.00p.
Castellani, Giovanni. Gear transmissions. 3,683,714, Cl. 74-414.00r.
Castrelon, Salvador C. Date harvesting device. 3,684,072, Cl. 193-7.000.
Cather, Robert L. Weed guard for the hooks of a treble hook. 3,683,541, Cl. 43-43.300.
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Cawood Wharton & Company Limited: *See—*
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Cayle, Theodore Cayle,; and Schleich, Hans, to Baxter Laboratories, Inc. Mannan depolymerase enzyme combination. 3,684,710, Cl. 252-8.55r.
Cello Chemical Company, The: *See—*
Okon, Nathaniel N., 3,684,325.
Centaur Mini Computer Devices Inc.: *See—*
Wayne, Ronald G., 3,684,290.
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Tomanec, Ladislav; and Pospisil, Karel, 3,683,698.
Chabier, Martial, to C.H.M.P. Berthiez. Automatic tool loader for a machine tool. 3,683,490, Cl. 29-568.000.
Chadwick, Alexander, to Chrysler Corporation. Adjustable valve timing for NO_x control. 3,683,875, Cl. 123-90.150.
Chaft, Marc E. Intra-uterine contraceptive devices. 3,683,905, Cl. 128-130.000.
Challe, Henry W.; and Challe, Kathleen M. Wheel spoke mounted reflector. 3,684,347, Cl. 350-97.000.
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Chamberlin, Richard M.; and Stana, Regis R., to Westinghouse Electric Corporation. Liquid treatment system for high pH water. 3,684,094, Cl. 210-206.000.

Champagne, Carol Z., to Factory Mutual Research Corporation. Fire protection system with a variable pressure floor. 3,684,023, Cl. 169-16.000.

Champion Heaters Proprietary Limited: *See—*
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Champion, Robert S. Golf club including stance diagram. 3,684,294, Cl. 273-183.00d.

Chandrasekaran, Swayambu, to Allied Chemical Corporation. Process for preparing perfluoro-2-butyne polyme. 3,684,786, Cl. 260-92.100.

Chang, Hung Chi; and Ostroski, John W., to Westinghouse Electric Corporation. Passivated surfaces and protective coatings for semiconductor devices and processes for producing the same. 3,684,592, Cl. 148-33.300.

Chapin, Jay C., to Ventron Instruments Corporation, Scientific Chemicals Division. Method of flame-proofing cellulosic materials and product produced thereby. 3,684,559, Cl. 117-102.00r.

Chapman, Charles Brian: *See—*
Abbott, Norman Basil; and Chapman, Charles Brian, 3,684,769.

Chapman, John S.: *See—*
White, Arlton H.; and Chapman, John S., 3,683,655.

Charbonnier, Roger Charles, to Adret-Electronique Vladimir Komarov Trappes. Function generator and variable capacity diode oscillator employing said generator. 3,684,982, Cl. 331-177.00v.

Chase Manhattan Capital Corporation, mesne: *See—*
Detwiler, John, 3,683,990.

Chatin, Remy, to Moulinage RT Retorderie de Chavanoz. Guide element for use in producing novelty yarns. 3,683,607, Cl. 57-18.000.

Chelocci, Kenneth M.; and Thomas, Freddy E., to Paramedical Specialties. Tracheal instrument. 3,683,931, Cl. 128-351.000.

Chemical Generators Inc.: *See—*
Callerame, Joseph, 3,684,437.

Chemiebau Dr. A. Zierengmb H & Co. KG: *See—*
Stauffer, Adolf, 3,684,440.

Chemische Werke Huls Aktiengesellschaft: *See—*
Goldbach, Gunther; and Meyer, Heinz-Hermann, 3,684,760.

Chen, Hai Y., to Mobil Oil Corporation. Reactivation of deactivated zeolite catalysts. 3,684,738, Cl. 252-412.000.

Cheney, Richard F.; and Rench, Nicholas W., to Sylvania Electric Production Inc. Tungsten-alloy electrode with brazable leads integral with emitter head. 3,684,912, Cl. 313-346.00r.

Cheprasov, Ivan Matveevich: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.

Cherepanov, Vladimir Petrovich: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.

Chesler, Ronald Benjamin; and Geusic, Joseph Edward, to Bell Telephone Laboratories, Incorporated. Pulsed laser arrangement. 3,684,893, Cl. 307-88.300.

Chevron Research Company: *See—*
Langlois, Gordon E.; Olson, Lloyd J.; and Rudy, Charles E., Jr., 3,684,700.
Roselius, Ronald R., 3,684,688.

Chicago Bridge & Iron Company: *See—*
McCabe, John Stanton, 3,683,631.

Childers, Spencer L.: *See—*
Black, Stewart L.; Childers, Spencer L.; and Bieri, Leonard, Jr., 3,683,790.

Chisholm, Douglas S., to Dow Chemical Company, The. Conveying and forming method and apparatus for fibers having balbous ends. 3,684,474, Cl. 65-105.000.

C.H.M.P. Berthiez: *See—*
Chabier, Martial, 3,683,490.

Christie, John B.; Robison, Glenn W.; and Runquist, Raymond C., Jr., to National Cash Register Company, The. Color bar code tag reader with light-emitting diodes. 3,684,868, Cl. 235-61.11e.

Chrom-Tronics, Inc.: *See—*
Jones, Harry S., 3,683,772.

Chrysler Corporation: *See—*
Chadwick, Alexander, 3,683,875.

Chvala, Bretislav; Janostik, Jaroslav; Mares, Jindrich; and Jerabek, Jan, to Elitex, Zavody textilniho strojirenstvi Generalni reditelstvi. Control device for a textile machine. 3,683,644, Cl. 66-8.000.

Ciba Geigy AG: *See—*
Bischof, Jose; Litzler, Alfred; Hertig, Jean; and Milicevic, Branimir, 3,684,431.

Ciba-Geigy AG: *See—*
Mueller, Willy, 3,684,792.
Ulrich, Paul, 3,684,808.

Cicci, George B.: *See—*
Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., 3,683,602.

Cimbalo, Robert N.; and Broyles, Allen R., to Atlantic Richfield Company. Regeneration of platinum group metal-alpha alumina catalyst. 3,684,740, Cl. 252-416.000.

Cinran Plastics Limited: *See—*
Crawford, Richard M.; and Parsons, Gerard A., 3,684,225.

Citizens Watch Co., Ltd.: *See—*
Komiyama, Katsuhiko, 3,683,614.

Ciuffini, Anthony J., to Xerox Corporation. Method of forming permanent electrostatic image with two-layered photoreceptor. 3,684,500, Cl. 96-1.00r.

Clark, Alfred J., to Motorola, Inc. Cartridge locking and ejector mechanism. 3,684,299, Cl. 274-4.00b.

Clark, Alfred J., to Motorola, Inc. Cartridge eject and tape head indexing actuator mechanism. 3,684,300, Cl. 274-4.00a.

Clark, Ross P.: *See—*
Bunas, Gary L.; and Clark, Ross P., 3,684,547.

Clarke, Terence J. L.; and Evans, Ivor; deceased (by Evans, Josie V.; administratrix), to United Shoe Machinery Corporation. Method of and apparatus for coating work pieces with thermoplastic material. 3,684,628, Cl. 156-583.000.

Classens, Johannes E. L.: *See—*
Garritsen, Johan W.; and Classens, Johannes E. L., 3,684,797.

Clauset, Alvin O., Jr.; Hoyt, Donald L.; and Hall, Russell W., Jr., to Texaco Inc. Means and method for automatically determining the interface positions of an injection fluid in a petroleum or gas reservoir using an electrolytic model of the reservoir. 3,84,872, Cl. 235-151.300.

Claussen, Uwe, to Bayerische Berg-Hutton-und Salzwerke AG. Roller bearing. 3,683,734, Cl. 83-345.000.

Clement Claude J.: *See—*
Neel,Emmanuel E. A.; Gaucher, Michel; and Clement Claude J., 3,684,695.

Clevite Corporation: *See—*
Arthur, Gene M., 3,684,271.
Schweitzer, Earl O.; and Geil, Ronald J., 3,684,275.

Clinebell, Virgil L. Expandable ice form. 3,684,234, Cl. 249-112.000.

Clingman, William H., Jr.: *See—*
Stroup, Ralph F.; Clingman, William H., Jr.; and Post, Robert C., 3,684,585.

Clinton, Harry M., to Swimrite, Inc. Automatic by-pass flow control. 3,684,169, Cl. 236-20.000.

Close, Sam. Filter assembly and disposable filter element therefor. 3,684,100, Cl. 210-444.000.

Cloud, Charles E., to Cloud Machine Corporation. Method of cutting articles from a strip. 3,683,729, Cl. 83-24.000.

Cloud Machine Corporation: *See—*
Cloud, Charles E., 3,683,729.

Clover, John R. Depth control skid for land working machine. 3,684,029, Cl. 172-239.000.

Clyde Machines, Inc.: *See—*
Olson, Clyde W., 3,684,108.

Coalson, Richard Leslie; and Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Method for increasing the liquid absorptive capacity of linear fluorocarbon sulfonic acid polymer. 3,684,747, Cl. 260-2.50r.

Coaxial Scientific Corporation: *See—*
McVoy, David S., 3,684,823.

Coccio, Ernest F.: *See—*
Evalds, Egils; and Coccio, Ernest F., 3,684,171.
Evalds, Egils; and Coccio, Ernest F., 3,684,947.

Cochran, Troy Lee; and Kirkpatrick, Melvin Douglas, to Union Carbide Corporation, mesne. Apparatus and method for making seed tape and the resulting seed tape. 3,683,583, Cl. 53-28.000.

Coffield, Thomas H.; Knapp, Gordon G.; and Jolly, James G. Process for the recovery of cobalt. 3,684,491, Cl. 75-103.000.

Coffman, Paul M.; and Johnson, Herbert G., to Shell Oil Company. Apparatus and method for billet heating and solid stretch forming. 3,684,258, Cl. 263-6.00r.

Cogar Corporation: *See—*
Allen, Charles A.; and Lund, Donald F., 3,685,027.
Anderson, Stanley R.; Bryant, Richard W.; and Tu, George K., 3,684,897.
Card, Charles E., Jr.; Donovan, Daniel J.; and Sweeney, William G., 3,684,817.
Kelly, William J., 3,684,967.
Meade, Robert M., 3,685,020.

Cohen, Paul J. Umbrella of collapsible construction. 3,683,948, Cl. 135-20.000.

Cole, Addison D., to Adcole Corporation. Implantable tissue stimulator. 3,683,932, Cl. 128-419.000.

Coleman, Dean George. Closure assembly for collapsible tube. 3,684,137, Cl. 222-490.000.

Coleman, Richard L.; Cummins, Billy H.; and Ashton, William B., to Texaco Inc. Production of oils stable to ultra-violet light. 3,684,684, Cl. 208-28.000.

Colgate-Palmolive Company: *See—*
Metzner, Irving L.; and O'Connell, Daniel C., 3,683,886.

Collier, William A. H.: *See—*
Merriman, Horace B.; Collier, William A. H.; and Richardson, Barry A., 3,683,667.

Collins, James D.: *See—*
Immel, Ralph B.; and Collins, James D., 3,685,049.

Collins, Neil E.; and Halt, Ira E., to General Electric Company. Ohmic contact for group III-V P-types semiconductors. 3,684,930, Cl. 317-234.00r.

Collins, Stephen Richard: *See—*
Miner, William Wiley; Scholer, Henry Gardner; and Collins, Stephen Richard, 3,683,796.

Colombini, Ariano; Viviani, Bruno; Massimino, Antonio; and Sironi, Giuseppe. Process for the preparation of arsenic-free copper cement from arsenical acid solutions. 3,684,492, Cl. 75-109.000.

Colombo, Arturo, to Sitam Societa Industriale Telai Automatics Milano. Device for automatically changing the loom cops. 3,683,972, Cl. 139-243.000.

Colter, Rudyard M. Compartmented nautical storage rack. 3,684,102, Cl. 211-88.000.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
Newman, Douglas A., 3,684,550.

Colwell, Lester V., to Hammond Machinery Builders, Inc. Method and apparatus for analyzing and controlling the cleaning operation of an electrochemical grinding device. 3,684,673, Cl. 204-424.200.

Combinatic Weslerschelde v.o.f., Utrecht: *See—*
Van Der Veen, Romke; and Griffioen, Albert, 3,683,632.

Combs, Elvey S. Fish bait and method of making the same. 3,684,519, Cl. 99-3.000.

Combustion Engineering, Inc.: *See—*
Zmola, Paul C., 3,683,866.

Comerford, John M., to Personal Products Company. Absorbent product comprising a fluid impervious barrier of a repellent tissue and a hydrocolloid. 3,683,917, Cl. 128-287.000.

Comfort, Inc.: *See—*
Miller, Raoy J.; and Trabbic, Gerald W., 3,684,188.

Cominco Ltd.: *See—*
Lewis, Gerald Perley; Smyth, Robert William; Booker, Philip P.; and Zeliznak, Richard, 3,684,586.

Commissariat a l'Energie Atomique: *See—*
Huguet, Michel; Rebut, Paul-Henri; and Torossian, Antoine, 3,684,992.

Commonwealth Scientific and Industrial Research Organization: *See—*
Cook, John Robert; Delmenico, Jack; and Jones, Francis William, 3,684,430.

Compagnie Generale des Etablissements Michelin, raison Sociale Michelin: *See—*
Lejeune, Daniel, 3,683,479.

Compagnie Internationale pour l'Informatique: *See—*
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Compur-Werk Gesellschaft mit beschrankter Haftung: *See—*
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Computer Transmission Corporation: *See—*
Naff, Fredric L., Jr., 3,684,925.

Comstock, Allan J.: *See—*
Stutzman, Guy R.; and Comstock, Allan J., 3,684,910.

Congdon, John M., to Jerobee Industries, Inc. Control system for remotely controlled model car. 3,683,546, Cl. 46-244.00b.

Conley, William J., Jr.; and Ingram, Clifford G., to International Business Machines Corporation. Probe and guide assembly for testing printed circuit cards. 3,684,960, Cl. 324-158.00f.

Conradty, C.: *See—*
Reichelt, Bernhard; Lippert, Wolfgang; Zollner, Dieter; and Kegel, Kurt, 3,684,745.

Conroy, Thomas P.; Fredrickson, Walter G.; and Thrailkill, Howard A., to Harris-Intertype Corporation. Editing apparatus. 3,685,019, Cl. 340-172.500.

Consarc Corporation: *See—*
Wooding, Patrick J.; and Roberts, Raymond John, 3,684,001.

Continental Can Company, Inc.: *See—*
Fettinger, John G.; and Manizza, Guelfo A., 3,684,156.
Szpitalak, Wesley J., 3,683,799.

Continental Elektroindustrie Aktiengesellschaft: *See—*
Thebis, Eberhard, 3,683,697.

Continental Sensing Inc.: *See—*
Vaughan, Charles L.; and Vesser, William C., 3,683,696.

Contois, Lawrence E. Method of preparing a homogeneous dye-sensitize electrophotographic element. 3,684,548, Cl. 117-34.000.

Conwicke, Joel A., to Du Pont de Nemours, E. I., and Company. Screen printable solder compositons. 3,684,533, Cl. 106-1.000.

Cook Billy G.; Pollard, Barry; and Martinez, Romulo M., to Rohr Corporation. Methods of bonding metals together. 3,683,488, Cl. 29-472.300.

Cook, John Robert; Delmenico, Jack; and Jones, Francis William, to Commonwealth Scientific and Industrial Research Organization. Permanent setting of wool and wool-containing articles. 3,684,430, Cl. 8-128.000.

Cook, Robert A., to Metrodata Systems Inc. Digital recording apparatus. 3,685,031, Cl. 340-174.10k.

Cook, Robert L. Propulsion system. 3,683,707, Cl. 74-84.000.

Cook, William A. Rotatable X-ray grid with non-stationary center and method. 3,684,885, Cl. 250-62.000.

Cooper, Hal B. H. Process for producing a dihaloborane-containing stream. 3,684,462, Cl. 423-276.000.

Coppens, Mattheus Johannes Martinus; and Mannaerts, Livinus Eduardus Maria Jozephus, to Inland Steel Company. Disposable liquefied gas container and burner outlet fitting therefor. 3,684,132, Cl. 222-5.000.

Corlett, Donald A., Jr.; and Caldis, Panos D., to Del Monte Corporation. Plant culture method and product. 3,683,550, Cl. 47-58.000.

Correll, Edward M., to General Electric Company. Electrolytic capacitor with improved seal. 3,684,927, Cl. 317-230.000.

Corwin, Harry L.: *See—*
Blackburn, Marvin H.; and Corwin, Harry L., 3,683,481.

Cosgrove, John Travers; and Drake, Ronald, to British Railways Board and Shaw, Joshua, & Sons Limited. Fork lift load handling devices. 3,684,114, Cl. 214-654.000.

Coshow, Chester L. Washing machine. 3,683,647, Cl. 68-23.200.

Cotabish, Harry N., to Mine Safety Appliances Company. Fresh air respirator. 3,683,907, Cl. 126-547.000.

Cotter, John J.; and Abronson, Charles J., to E & M Laboratories. High speed circulator switch. 3,684,983, Cl. 333-1.100.

Covington, Cecil E.: *See—*
Carter, George D.; Covington, Cecil E.; and Schellhase, Ernst C., 3,683,988.

Cox, Howard Nesbit, to General Electric Company. Motor drive system for rolling mill. 3,683,653, Cl. 72-8.000.

Coyne, Francis P., to Ingersoll-Rand Company. Drill rod indexing device. 3,684,039, Cl. 175-85.000.

Crabtree, Norman. Vehicle brake actuator and lock assembly. 3,684,063, Cl. 188-265.000.

Craig, Grantland A., to Paper Converting Machine Co., Inc. Smock-forming machine and method. 3,684,611, Cl. 156-250.000.

Craig, William Allan; and Gurton, Owen Allen, to Imperial Chemical Industries Limited. Energetic constituent for incendiary and explosive compositions. 3,684,595, Cl. 149-41.000.

Crain, N. Robert; Crain, William W.; Pollitt, Gary L.; and Rea, Donald E., to Documentor Sciences Corporation. Endless belt paper transporting and processing apparatus. 3,684,076, Cl. 197-127.00r.

Crain, Norman Robert: *See—*
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Crain, N. Robert; Crain, William W.; Pollitt, Gary L.; and Rea, Donald E., 3,684,076.

Cramer, Mert, to Berkey/Colorteam Mfg., Inc. Dimmer circuit. 3,684,919, Cl. 315-194.000.

Crane, Brian, to Wickman Machine Tool Sales Limited. Attachments for automatic lathes. 3,683,724, Cl. 82-2.500.

Crapanzano, Russell S. Gravity activated prosthetic device. 3,683,423, Cl. 3-1.100.

Crawford, Howard H. Grass edger. 3,684,027, Cl. 172-15.000.

Crawford, Howard H. Grass edger with one-piece cutter bar collar. 3,684,028, Cl. 172-15.000.

Crawford, Richard M.; and Parsons, Gerard A., to Cinran Plastics Limited. Garbage bag holder. 3,684,225, Cl. 248-99.000.

Creamer, Adelene. Non-slip foot device. 3,683,519, Cl. 36-11.500.

Crisafi, Robert C., to Damon Corporation. Unit dosage package. 3,684,128, Cl. 221-63.000.

Crompton Parkinson Limited: *See—*
Spira, John Ralph; and Newman, Anthony John, 3,684,959.

Cronkhite, Leonard W., Jr.: *See—*
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Crough, Paul E.: *See—*
Cain, William J.; and Crough, Paul E., 3,684,512.

Crouse, Parker E.: *See—*
Bush, Stanley E.; Crouse, Parker E.; and Saltus, George E., 3,684,833.

Crowder, Wyly Kenneth. Instant action brake for vehicles. 3,683,718, Cl. 74-562.500.

Crowe, James A.; and Krattenmacher, Willi, to Beckman Instruments, Limited. Liquid dispensing apparatus. 3,683,977, Cl. 141-130.000.

Crown Cork & Seal Company, Inc.: *See—*
Potts, Vinson S.; and Duham, Frederick W., 3,683,834.

Cummins, Billy H.: *See—*
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Curby, William A.: *See—*
Bannister, William W.; Pennace, John R.; and Curby, William A., 3,684,733.

Curnow, John W., to Sperry Rand Corporation. Power transmission. 3,683,958, Cl. 137-489.000.

Curran, John Patrick, to Amchem Products, Inc. Metal treating process. 3,684,588, Cl. 148-6.152.

Curtis, Hazen, III; and Tuchen, Gerd Achim, to Bell Telephone Laboratories, Incorporated. Variable inductance coil form assembly. 3,684,993, Cl. 336-136.000.

Cutter Laboratories, Inc.: *See—*
Cutter, Robert K., 3,683,922.
Stemmer, August L.; Kah, Paul; and Stubstad, James A., 3,683,422.

Cutter, Robert K., to Cutter Laboratories, Inc. Snake-bite kit with suction cup having variable degrees of suction. 3,683,922, Cl. 128-300.000.

Cutters Machine Company, Inc.: *See—*
Benson, Robert W.; and Reed, Robert G., 3,684,273.

D'Agostino, Candido: *See—*
Barba, Diego; D'Agostino, Candido; and Liuzzo, Giuseppe, 3,684,661.

Dahlquist, John A.; Marlor, Guy A.; and Whitehorn, Richard M., to Varian Associates. Display tube camera system allowing an observer an unobstructed view of the display. 3,684,365, Cl. 355-3.000.

Daimler-Benz Aktiengesellschaft: *See—*
Wilfert, Karl; and Andres, Rudolf, 3,683,717.

Dainippon Pharmaceutical Co., Ltd.: *See—*
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Daiwa Boseki Kabushiki Kaisha: *See—*
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D'Alessandro, Franklin M., to Bunker-Ramo Corporation, The. Hermetically sealed connector. 3,685,005, Cl. 339-136.000.

Damon Corporation: *See—*
Crisafi, Robert C., 3,684,128.
Daneck, David A.: *See—*
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Danhauser, Justus: *See—*
Pelz, Willibald; Kabitzke, Karlheinz; Freytag, Karl-Heinz; Vetter, Hans; Danhauser, Justus; and Bockly, Erich, 3,684,513.
Danneberg, Peter: *See—*
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Datel Corporation: *See—*
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Davidson, Eugene M.; and Monroe, Robert C., to Hudson Products Corporation. Variable pitch fan for heat exchangers. 3,684,398, Cl. 416-155.000.
Davies, Fred. Pipe fitting tool. 3,683,657, Cl. 72-112.000.
Davies, Norman, to Westinghouse Electric Corporation. Circuit interrupter spring charging means with toggle type latch. 3,684,848, Cl. 200-153.0sc.
Davis,. Gun recoil reducer. 3,683,534, Cl. 42-1.00r.
Davis, Cecil J., to Bridge Data Products, Inc. Apparatus for punching, printing and verifying data cards. 3,684,164, Cl. 234-34.000.
Davis, Ialter Richard: *See—*
Bolomon, James E.; and Davis, Ialter Richard, 3,684,974.
Davis, Jerry B.: *See—*
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Day, Lawrence, to Spitfire Tool & Machine Co., Inc. Means for applying a liquid abrasive over the surface of a rotatable lapping table of a lapping machine. 3,683,562, Cl. 51-131.000.
De Carranza, Elma. Method of separating proteins from proteinaceous animal material using mucilage of flax, quine or fleawort. 3,684,790, Cl. 260-112.000.
De Crepy, Edourad, to Societe Anonyme Francaise des Appareils Automatiques Taximetres-Taxiphones S.A.F.A.A. Automatic sheet storage apparatus. 3,683,943, Cl. 133-1.00r.
De Leon, Luis F. Illuminating apparatus and ballast circuit. 3,684,921, Cl. 315-276.000.
De Remer, Harold A., to General Electric Company. Electric toaster control. 3,684,861, Cl. 219-413.000.
Dear, William Noel; Ramsay, James Ian; and Thomson, Alexander, to Albright & Wilson Limited. Manufacture of sodium or potassium tripolyphosphate. 3,684,436, Cl. 23-106.000.
Debue, Marlene. Adjustable hair curler. 3,683,940, Cl. 132-39.000.
Dechene, Walter; Rothe, Herbert; and Salmen, Fritz, to Stahlwerke Sudwestfalen AG. Rolling method for wire and other rod-shaped rolling stock. 3,683,662, Cl. 72-235.000.
Dehne, Clarence A.: *See—*
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Deknatel Inc.: *See—*
Kurtz, Leonard; Bidwell, Robert; Mishkin, Sidney; and Hallstein, Edward, 3,683,913.
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Delavan Manufacturing Company: *See—*
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Delin, Per Staffan; Kiessling, Karl Hans Fritz; Thelin, Karl Hugo; and Lars, Solve, to Astra Lakemedel Aktiebolag. Enzymes and process for their preparation. 3,684,658, Cl. 195-62.000.
Delmenico, Jack: *See—*
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DeMarest, Donald M., to General Electric Company. Converter valve-pair arrangement. 3,684,943, Cl. 321-8.00c.
Demidov, Jury Alexeevich: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.
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Deming, Andrew F. Method and apparatus for calibrating a spring. 3,683,480, Cl. 29-173.
Denisov, Vladimir Ivanovich: *See—*
Novikov, Alexei Viktorovich; Fridman, Lev Petrovich; Zinkovsky, Viktor Antonovich; Denisov, Vladimir Ivanovich; Fisenko, Konstantin Vitalievich; Rottenberg, Vadim Nikolaevich; and Presnyakov, Alexandr Alexandrovich, 3,683,998.
Denki Onkyo Co., ltd.: *See—*
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deNora, Vittorio; Meyer, Lewis M.; and Barbato, Alexander L.; deceased (by Barbato, Patricia J.; executrix), to Electronor Corporation. Recoating of electrodes. 3,684,543, Cl. 117-2.00r.
Depoorter, Henri: *See—*
Vanheertum, Johannes Josephus; Ghys, Theofiel Hubert; and Depoorter, Henri, 3,684,505.
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Deschepper, Pierre: *See—*
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,684,560.
Deslierres, John M., to North American Rockwell Corporation. Ballast system for submersible vessels. 3,683,835, Cl. 114-16.400.
Desluge, George B., to Watlow Electric Manufacturing Company. Radiant heater. 3,684,859, Cl. 219-354.000.
Desmond, John D. Display package for collapsible tubes. 3,684,085, Cl. 206-45.140.
Det Norske Zinkkompani A/S: *See—*
Steintveit, Georg, 3,684,490.
Detwiler, John, to Chase Manhattan Capital Corporation, mesne. Non-skid tire structure. 3,683,990, Cl. 152-225.000.
Detzel, Joseph, to Lever Brothers Company. Attached handle for carrier carton. 3,684,153, Cl. 229-52.00a.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Dino, Mariano Silva. Adjustable hammer for automatic pistols. 3,683,537, Cl. 42-69.00r.
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Dixon, K., Corporation: *See—*
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Doggart, John; and Gleave, Paul Rogerson, to V & E. Friedland Limited. Domes for electric bells. 3,683,845, Cl. 116-148.000.
Donald, Harold J.; Dewald, Carl E.; and Caiola, Robert J. Method for the vapor phase surface sulfonation of plastic webs. 3,684,554, Cl. 117-47.00a.
Donovan, Daniel J.: *See—*
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Doring, Gunter; Kahle, Klaus; and Schneider, Dietmar, to Veb Kombinat Kali. Method for the production of mineral fiber boards, containing mineral wool. 3,684,650, Cl. 162-3.000.
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Driscoll, Hiram E., to Hercules Incorporated. Electric initiators for high energy firing currents. 3,683,811, Cl. 102-28.000.

Drits, Leonid Borisovich: *See—*
Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leonid Borisovich, 3,683,683.

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Duck, Wolfgang; deceased (by Duck, Hertha; heir). Circuit arrangement for a difference amplifier in integrated construction. 3,684,973, Cl. 330-30.00d.

Duckhinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; and Grachev, Leonip Palovich, to Izdatelstvo "Izvestia". Apparatus for wrapping articles with wrapping material. 3683,586, Cl. 53-228.000.

Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Stereoscopic photography. 3,683,773, Cl. 95-18.000.

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Dunkin, Buell. Work-positioning grinding fixture. 3,683,561, Cl. 51-121.000.

Dunlap, Glenn H.: *See—*
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Dunn, Wendell E., Jr. Dual flue condenser. 3,683,590, Cl. 55-71.000.

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Eachus, Joseph J., to Honeywell, Inc. Array method and apparatus for encoding, detecting, and/or correcting data. 3,685,016, Cl. 340-146.1al.

Eander, Alfred: *See—*
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Eber, Nicolas, to Aktiebolaget Electrolux. Inert gas type absorption refrigeration apparatus employing secondary refrigeration system. 3,683,640, Cl. 62-333.000.

Eckert, Clarence J.; and Moulds, John W., to General Motors Corporation. Fuel rail-injector interconnection. 3,684,318, Cl. 285-189.000.

Edelman, Alfred E. Adapter for dental implants. 3,683,501, Cl. 32-10.00a.

Edelman, Robert I.; and Edwards, Evan A., to Eastman Kodak Company. Treating apparatus. 3,683,780, Cl. 95-94.00r.

Edelson, Andrew C. Circuit for controlling the duration of an interval between sound signals. 3,684,895, Cl. 307-132.00e.

Edlin, William Joel Reginald. Cleaning device. 3,683,953, Cl. 137-205.500.

Educational Tools, Inc.: *See—*
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Edwards, David V. Diaphragm. 3,684,406, Cl. 417-454.000.

Edwards, Evan A.: *See—*
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Edwards, Evan A. Film cartridge and photographic web for use therewith. 3,684,206, Cl. 242-71.200.

Edwards, James D.: *See—*
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Egami, Harutoshi: *See—*
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Eichenlaub, Robert G. Flexible wall-covering attaching means. 3,683,994, Cl. 160-327.000.

Eichler, Richard H.; and Simon, John G., to General Motors Corporation. Non-destructive test apparatus and method for grease packed bearings. 3,683,673, Cl. 73-37.000.

Eickmann, Karl. Fluid pressure communication passages in a multiple radial chamber fluid handling device. 3,683,751, Cl. 91-486.000.

Einerson, Amos M.; Schauer, Frank N.; and Abelle, Thomas G., to Fait Manufacturing Company, The. Submersible pump and control system. 3,684,400, Cl. 417-40.000.

Einfalt, Arthur C.; and Osborn, Richard A., to Owens-Illinois, Inc. Method and apparatus for inspecting hollow glass articles. 3,684,385, Cl. 356-240.000.

Eisdorfer, Norman R.: *See—*
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Eisen, Howard; and Feighan, Joseph A., to Glamorene Products Corporation. Oven cleaning method and product. 3,684,576, Cl. 134-2.000.

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Eissmann, Kurt William, to General Electric Company. Potential device with input resistance adjustment. 3,684,948, Cl. 323-43.50r.

Ekwall, Gosta Berhard: *See—*
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Electro-Nucleonics, Inc.: *See—*
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Electronic Transmission Systems, Inc.: *See—*
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Electronics Corporation of America: *See—*
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Electronique Marcel Dassault: *See—*
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Electronor Corporation: *See—*
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Elektriska Svetsningsaktiebolaget: *See—*
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Ellithorpe, Ernest; and Fletcher, Ronald B., to Sulform Limited. Method and apparatus for the solidification of molten sulphur. 3,684,005, Cl. 165-1.000.

Ells, Myron B., to Personal Products Company. Flushable sanitary napkin. 3,683,919, Cl. 128-290.00w.

Elmer, Arthur Ernest Henry. Rotary transmission device. 3,684,397, Cl. 416-39.000.

Elmo Company Limited: *See*—
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Emelianenko, Natalia Lvovna: *See*—
Morotsky, Nikolai Stepanovich; Emelianenko, Natalia Lvovna; and Shagabutdinov, Ramil Iskandarovich, 3,684,743.

Emerson, William E., to Hooker Chemical Corporation. Method for stabilizing palladium containing solutions. 3,684,534, Cl. 106-1.000.

Emhart Corporation: *See*—
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Emicke, Klaus; and Goralczyk, Wilhelm, to Norddeutsche Affinerie. Method of recovering metals from sulfide-containing mixtures. 3,684,489, Cl. 75-101.00r.

Emigh, John H., to Mask-Off Company. Coating composition for indicating sterilization. 3,684,737, Cl. 252-408.000.

Emmons, Howard W.; Yao, Cheng; and Smith, James B. Method for fighting a fire. 3,684,019, Cl. 169-1.00a.

Endo, Takaya: *See*—
Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, 3,684,514.

Engert, Binz-Dieter, to Sud-Atlas-Werke G.m.b.H. Magnetic tape recorder. 3,684,212, Cl. 242-201.000.

Engler, Otto; Hammer, Theodror; and Muler, Meinhard, to Industril-Werke Karlsrule Aktiengesellschaft. Apparatus for making seals on containers. 3,684,619, Cl. 156-380.000.

Enniglch, Westphalia: *See*—
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Enright, Norman D. Loc-blox. 3,683,827, Cl. 109-50.000.

Entwistle, Clive. Lamphead for tungsten-halogen lamps. 3,684,883, Cl. 240-92.000.

Eppinette, Horace. Portable stairway. 3,684,057, Cl. 182-93.000.

Eprad Incorporated: *See*—
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Boudouris, Angelo; and Kulish, Stanley J., Jr., 3,684,358.

Ericson, Richard E., to Elliot Laboratories, Inc. Anti-static plastic shoe cover and method of making same. 3,684,922, Cl. 317-2.00b.

Ernst, Wolfram: *See*—
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Eron, Abbot; and Eron, Theodore. Double-end marking pen. 3,684,389, Cl. 401-207.000.

Eron, Theodore: *See*—
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Eskridge, Marshall; and Willson, James K. V. Tissue auger. 3,683,891, Cl. 128-2.00b.

Esso Research and Engineering Company: *See*—
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Etablissements Pennel & Flipo: *See*—
Pennel, Gerard J.; Prouvost, Gonzague J.; and Pruvost, Robert P., 3,683,431.

Etter, Berwyn E. Machine mounted cutting torch. 3,684,187, Cl. 239-414.000.

Eugen Hirschburger KG: *See*—
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Evalds, Egils; and Coccio, Ernest F. Circuit for monitoring a temperature related condition and for controlling a heat generating device. 3,684,171, Cl. 236-78.000.

Evalds, Egils, to Athena Controls, Inc. Thermocouple temperature control system. 3,684,172, Cl. 236-78.000.

Evalds, Egils; and Coccio, Ernest F. Circuit for determining and controlling the current supplied to an adjustable resistance load. 3,684,947, Cl. 323-24.000.

Evans & Sutherland Computer Corporation: *See*—
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Evans, Hugh W.: *See*—
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Evans, Ivor: *See*—
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Evans, James P. Mud flap assembly. 3,684,312, Cl. 280-154.50r.

Evans, Josie V.: *See*—
Clarke, Terence J. L.; and Evans, Ivor, 3,684,628.

Evans, Richard H., to Hercules Incorporated. Aqueous explosive compositions having reversible fluent-non-fluent properties. 3,684,594, Cl. 149-38.000.

Evgrafov, Boris Ivanovich; Kupeev, Jury Alexandrovich; and Turok, Galina Iosifovna, to Nauchno-issledovatelsky i experimentalny institut Avromobilnogo elektrooborudovania i avtopriboroo. Rectifier for an electric generator. 3,684,944, Cl. 321-8.000.

Ex-Cell-O Corporation: *See*—
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Extracorporeal Medical Specialties, Inc.: *See*—
Holter, John W., 3,683,929.

Faber, Peter, to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft. Process for making nickel (II) hydroxide, especially for use in electrodes. 3,684,441, Cl. 423-522.000.

Fabo, Endre, to Rirco Alloys AB. Method for the inactivation of pulverulent ferrosilicon. 3,684,479, Cl. 75-.50b.

Fachbach, Heinz; and Thien, Gerhard, to Hans List. Internal combustion engine with sound-absorbing casing. 3,684,053, Cl. 181-33.00k.

Factory Mutual Research Corporation: *See*—
Champagne, Carol Z., 3,684,023.
Livingston, William L., 3,684,025.

Fait Manufacturing Company, The: *See*—
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Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, 3,684,787.
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Homuth, Horst; Feess, Erich; and Schidlo, Wolfram, 3,684,428.
Scherep, Otto; Millauer, Hans; and Muller, Klaus-Dieter, 3,684,796.

Farr, Kenneth E., to Westinghouse Electric Corporation. Slow motion converter for field sequential color television signals. 3,683,992, Cl. 178-5.4cd.

Fass, Jerome S. Educational devices. 3,683,516, Cl. 35-37.

Fastener Corporation: *See*—
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Fatutto, Pierlugi: *See*—
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Feather, Landis E., to Westinghouse Electric Corporation. Method of making disk-type windings for electrical inductive apparatus. 3,683,495, Cl. 29-605.000.

Fedrigo, Renzo, to Olivetti, Ing., C., & C., S.p.A. Feed device for a metal strip. 3,684,146, Cl. 226-176.000.

Feess, Erich: *See*—
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Fegan, Lloyd V., Jr.; and Sloughfy, James L., to Bethlehem Steel Corporation. Method for producing highly-fluxed pellets containing oxides of iron from in-plant waste products. 3,684,478, Cl. 75-3.000.

Feighan, Joseph A.: *See*—
Eisen, Howard; and Feighan, Joseph A., 3,684,576.

Feldkamper, Richard, to Windmoller & Holscher. Apparatus for the continuous formation of regular stacks of flat workpieces such as flaitened bags or sacks. 3,683,758, Cl. 93-93.0dp.

Fenwal, Inc.: *See*—
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Ferno-Washington Inc.: *See*—
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Fettinger, John G.; and Manizza, Guelfo A., to Continental Can Company, Inc. Combination package. 3,684,156, Cl. 229-14.00b.

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Field, Nathan D.; and Williams, Earl P., to GAF Corporation. Novel interpolymers useful as thickening agents. 3,684,776, Cl. 260-78.0st.

Field, Nathan D.; and Williams, Earl P., to GAF Corporation. Novel interpolymers useful as thickening agents. 3,684,777, Cl. 260-78.0st.

Finkelstein, Manuel: *See—*
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Finney, Robert R.: *See—*
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Fischer, Edward; and Trickey, William J., to Superior Pipe Specialties Company. Sprinkler head riser mechanism. 3,684,179, Cl. 239-203.000.

Fischer, Georg, AG-Brugg: *See—*
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Fischer, Karl; and Schreder, Felix, to Mssrs. E. G. O. Elektro-Gerste Blaore u. Fische. Thermostatically controlled electric cooker hot plate. 3,684,862, Cl. 219-450.000.

Fischer, Paul W.: *See—*
Scheffel, John W.; Fischer, Paul W.; and Schmidt, Ethan R., 3,684,012.

Fisenko, Konstantin Vitalievich: *See—*
Novikov, Alexei Viktorovich; Fridman, Lev Petrovich; Zinkovsky, Viktor Antonovich; Denisov, Vladimir Ivanovich; Fisenko, Konstantin Vitalievich; Rattenberg, Vadim Nikolaevich; and Presnyakov, Alexandr Alexandrovich, 3,683,998.

Fitzgerald, Donald T.; and Campbell, Jack S. Plastic piston pump. 3,684,410, Cl. 417-554.000.

Flanagan, Michael I., to Viatron Computer Systems Corporation. Video data display system. 3,685,039, Cl. 340-324.00a.

Flanagan, Michael J., to Viatron Computer Systems corporation. Video data color display system. 3,685,038, Cl. 340-324.00a.

Fleissner, Hans, to Vepa AG. Apparatus for coating a material length with a fluid coating substance. 3,683,648, Cl. 68-5.00d.

Fleit, Alexander; and John, Ronald, to Molins Machine Company Limited. Hydrostatic bearings. 3,684,333, Cl. 308-122.000.

Fleming, Robert F. Jr., to Sperry Rand Corporation. Lookout assist device. 3,685,009, Cl. 340-16.00r.

Fletcher, Ronald B.: *See—*
Ellithorpe, Ernest; and Fletcher, Ronald B., 3,684,005.

Flieder, Robert A.: *See—*
Weisglass, Louis I.; and Flieder, Robert A., 3,684,371.

Floehr, Walter L. Automatic hopper gate lock. 3,683,820, Cl. 105-282.00r.

Flournoy, Norman E.; Eisenlohr, Gerald M.; Black, Frank R., Jr.; and Schultz, James E., to Texaco Inc. Filament plating system. 3,683,846, Cl. 118-33.000.

Flowtron Aire Limited: *See—*
Shield, Walter; Saggers, Michael John; and Calnan, James, 3,683,897.

FMC Corporation: *See—*
Blumbergs, John H.; and Mac Kellar, Donald G., 3,684,477.
Gleason, Robert Joseph, 3,684,438.
Wright, Carl L.; and Beacham, Harry H., 3,684,616.

Follstaedt, Donald W.; and Pinson, Richard D., to Armco Steel Corporation. Prevailing torque locknut. 3,683,989, Cl. 151-21.00b.

Ford, Frederick M., to Oak Electro/Netics Corporation. Electromechanical clutch. 3,684,068, Cl. 192-84.00t.

Forester, Howard B. Pessaries. 3,683,904, Cl. 128-127.000.

Forrest, Charles P. Wheeled football training sled having overhead chute. 3,684,283, Cl. 273-55.00r.

Foss, Rudolph G. Tapering tool for fiberglass pipe. 3,683,725, Cl. 82-4.00c.

Foster, Robert D. Method for processing eggs. 3,684,531, Cl. 99-196.000.

Fox, Daniel W.; and Wambach, Allen, to General Electric Company. Plastic cast. 3,683,903, Cl. 128-90.000.

Fox, Harry Alvin, Jr.: *See—*
Fritz, William Baird; Sanders, Neil Harrison; Reyner, Emerson Marshall, III; and Fox, Harry Alvin, Jr., 3,683,494.

Fox, Thomas U.: *See—*
Rose, Roger A.; and Fox, Thomas U., 3,684,439.

Franchi, Luigi, S.p.A.: *See—*
Locatelli, Loris, 3,683,538.

Francis, Ronald, to Itek Corporation. Data storage systems. 3,684,507, Cl. 96-27.000.

Franke, Kurt; and Steffen, Hermann, to ITT Industries, Inc. Lubricator, particularly for hydrodynamic brake evacuated during idling. 3,684,335, Cl. 308-187.000.

Franke, Norman W.: *See—*
Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., 3,684,748.
Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., 3,684,754.

Franke, Norman W.; and Singerman, Gary M., to Gulf Research & Development Company. Flame-resistant polyurethane compositions. 3,684,753, Cl. 260-2.5at.

Frankel, Leon A. Method and apparatus for anastomosing and incising. 3,683,925, Cl. 128-334.000.

Fransos, Pieiro; and Camosso, Domenico, to Riv-Skf Officine Di Villar Perosa S.p.A. Retaining cages for rolling elements in bearing. 3,684,337, Cl. 308-217.000.

Frazier, Arthur E., to Phillips Petroleum Company. Activated carbon black product. 3,684,763, Cl. 260-37.00r.

Frazier, Larry C.; and Bryant, Emerson C., to National-Standard Company. Tire building drum. 3,684,621, Cl. 156-401.000.

Fredrickson, James D.; and Hickman, Ella Sue, to Reynolds Leasing Corporation, mesne. Tobacco expansion process. 3,683,937, Cl. 131-140.000.

Fredrickson, Walter G.: *See—*
Conroy, Thomas P.; Fredrickson, Walter G.; and Thrailkill, Howard A., 3,685,019.

Freebairn, Hugh T.: *See—*
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French Oil Mill Machinery Company, The: *See—*
Nissle, William N.; Slaby, Robert K.; and Bredeson, Dean K., 3,684,252.

Frey, James O.; and Minnier, Henry B., to Sylvania Electric Products Inc. Process for preparing copper resistant silver activated zinc sulfide phosphors. 3,684,731, Cl. 252-301.60s.

Frey, Samuel S. Method of stripping the oxide film from a zinc surface. 3,684,719, Cl. 252-79.300.

Freytag, Karl-Heinz: *See—*
Pelz, Willibald; Kabitzke, Karlheinz; Freytag, Karl-Heinz; Vetter, Hans; Danhauser, Justus; and Bockly, Erich, 3,684,513.

Fridman, Lev Petrovich: *See—*
Novikov, Alexei Viktorovich; Fridman, Lev Petrovich; Zinkovsky, Viktor Antonovich; Denisov, Vladimir Ivanovich; Fisenko, Konstantin Vitalievich; Rattenberg, Vadim Nikolaevich; and Presnyakov, Alexandr Alexandrovich, 3,683,998.

Fried, Robert. Muscle activity recorder. 3,683,893, Cl. 128-2.00s.

Friedland, Kenneth, to Matchmaker Industries Inc. Hairpiece with simulated hairline. 3,683,941, Cl. 132-53.000.

Friedlander, Richard F. Traveling agricultural sprinkler. 3,684,178, Cl. 239-189.000.

Friedrichsen, Wilhelm; and Goehre, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Supported catalysts containing vanadium pentoxide and titanium dioxide and their use for the production of carboxylic acids and carboxylic acids and carboxylic ahydrides. 3,684,741, Cl. 252-435.000.

Frielingsdorf, Hans; Mueller-Tamm, Heinz; and Mahling, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of producing metal-clad plastic panels. 3,684,610, Cl. 156-244.000.

Frisch, Karl: *See—*
Reinke, Friedhelm; and Frisch, Karl, 3,684,851.

Fritz, William Baird; Sanders, Neil Harrison; Reyner, Emerson Marshall, III; and Fox, Harry Alvin, Jr., to AMP Incorporated. Monolithic mad. 3,683,494, Cl. 29-604.000.

Frohning, Hans, to Goldschmidt, Th., AG. Procedure for temporarily attaching a pressure plate to a heater plate. 3,684,613, Cl. 156-289.000.

Frolov, Alexei Sergeevich: *See—*
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.

Fromme, Richard H. Vehicle cleaning device. 3,683,441, Cl. 15-97.000.

Fujii, Hirohiko: *See—*
Yamachi, Yukio; Fujii, Hirohiko; Yamato-Machi, Kita; Kosuge, Hiroshi; and Morita, Koichi, 3,684,949.

Fujii, Kinjiro; Motoe, Akihiro; and Kasugai, Homuru, to Industrial Science and Technology, Agency of. Process of enrobing powder particles. 3,684,558, Cl. 117-100.00b.

Fujio, Tadami: *See—*
Otani, Yasuhiko; Ikegami, Yoshio; and Fujio, Tadami, 3,684,202.

Fujiwara, Mitsuto: *See—*
Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, 3,684,514.

Fukui, Keiji. Automatic image shifting device. 3,683,525, Cl. 40-36.000.

Fuller, Everett J. Adducting slurry promoters. 3,684,701, Cl. 208-308.000.

Fullmer, Richard K., to Electronic Development Corporation. Portable lecturn unit. 3,684,831, Cl. 179-1.0at.

Fulton Industries, Inc.: *See—*
Linblad, Thomas N., 3,684,167.

Funk, Charles F. Thermit pipe welding mold. 3,684,003, Cl. 164-362.000.

Fury, Roy C.: *See—*
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GAF Corporation: *See—*
Berg Ralph I.; Young, James L.; and Ulmer, Arnold G., 3,684,373.
Field, Nathan D.; and Williams, Earl P., 3,684,776.
Field, Nathan D.; and Williams, Earl P., 3,684,777.

Galbraith, Lyle D., to Rocket Research Corporation. Inflating apparatus. 3,684,404, Cl. 417-184.000.

Gallant, Reginald R.; Swain, Roger S.; and Waterman, Neil S. Integrated push button panel for controlling aircraft instrumentalities. 3,684,000, Cl. 325-25.000.

Galutva, Gennady Vasilievich; Ryazantsev, Alek Iosifovich; Presnyakov, Gennady Stepanovich; and Modestov, Jury Konstantinovich. Device for precision displacement of a solid body. 3,684,904, Cl. 310-8.000.

Gambill, Charles C.: *See—*
Barr, Paul N.; and Gambill, Charles C., 3,683,871.

Gamson, Bernard William. Petroleum coke production. 3,684,697, Cl. 208-131.000.

Gangawere, Lloyd B., to Westinghouse Electric Corporation. Rectangular to polar display converter. 3,684,915, Cl. 315-23.000.

Garcia, Felipe G.: *See—*
Bahder, George; and Garcia, Felipe G., 3,684,958.

Gardisette GmbH, Firma: *See—*
Schmitz, Rudolf; and Baier, Franz, 3,684,608.

Garnett, Donald W., to Mahogany Forms, Inc., mesne. Apparatus for blending and portioning meat and other products. 3,683,793, Cl. 99-450.100.

Garretson, George W. Fence repair system. 3,683,739, Cl. 85-49.000.

Garrett, Henry U. Well bore blocking means and method. 3,684,008, Cl. 166-55.000.

Garritsen, Johan W.; and Classens, Johannes E. L., to Stamicarbon N.V. Purification of laurolactam. 3,684,797, Cl. 260-239.30a.

Gartland, Albert J., Jr.: *See—*
Riley, George A.; and Gartland, Albert J., Jr., 3,685,007.

Garwood-Mendez Inc.: *See—*
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Gasner, William L., to Mc Culloch Corporation. Chain stabilizing chain saw sprockets. 3,683,980, Cl. 143-32.00r.

Gaston County Dyeing Machine Company: *See—*
Wardell, Winnifred A., 3,684,082.

Gaucher, Michel: *See—*
Neel,Emmanuel E. A.; Gaucher, Michel; and Clement Claude J., 3,684,695.

Gautney & Jones: *See—*
Gautney, George E.; Johnson, Rowland S.; and Piombino, John, 3,684,965.

Gautney, George E.; Johnson, Rowland S.; and Piombino, John, to Gautney & Jones. Digitalized remote control communications system. 3,684,965, Cl. 325-64.000.

Gawehn, Karlfried: *See—*
Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Thum, Waldemar; Gawehn, Karlfried; and Mollering, Hans, 3,684,659.

Geering, Emil J.; Shatz, Malcolm H.; and Leon, Edward, to Hooker Chemical Corporation. Process for the after-treatment of phosphate coatings. 3,684,587, Cl. 148-6.15r.

Gehring, Gerhard; and Hammelehle, Wilfried. Integrated operational amplifier. 3,684,972, Cl. 330-30.00r.

Geiger, Rolf; Ptaff, Werner; Eander, Alfred; Schone, Hans-Hermann; and Mager, Adolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. N (ai), N E(B29)-di-tert. butyloxycarbonylinsulin and process for its manufacture. 3,684,791, Cl.260-112.700.

Geil, Ronald J.: *See—*
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Gemco, Inc.: *See—*
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General Binding Corporation: *See—*
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General Cable Corporation: *See—*
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General Corporation, The: *See—*
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General Electric Company: *See—*
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Eichler, Richard H.; and Simon, John G., 3,683,673.
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General Precision Industries Limited: *See—*
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Genrich, Kurt, to Sola Basic Industries, Inc. Vacuum oil quench furnace. 3,684,263, Cl. 266-4.00a.

George Lithograph Company: *See—*
Hollwedel, Henry C., Jr., 3,684,366.

Germain, Andrew G.; and Dressel, William G. Coated graphite mold. 3,684,004, Cl. 164-364.000.

Geschwender, Robert C. Fabrication of honeycomb type cellular material. 3,684,618, Cl. 156-361.000.

Gesellschaf fur Nuklearmesstechnik und Industril-Elektronik M. Knuplemann & Co. mbH: *See—*
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Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hocheschule: *See—*
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Geshtenkern, Rafail Yakovlevich: *See—*
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Giachino, Eugene L.: *See—*
Burton, Raymond V., Jr.; and Giachino, Eugene L., 3,683,675.

Giberson, Maurice C. Two pin point clip. 3,683,464, Cl. 24-103.000.

Giesemann, Rolf: *See—*
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Gilbert, David Stone, to Imperial Chemical Industries Limited. Manufacture of laminated articles. 3,684,598, Cl. 156-79.000.

Giles, James, to American Chain & Cable Company, Inc. Conveyor system. 3,684,073, Cl. 193-36.000.

Gilinger, Jean A. Decorative space-saving vanity. 3,684,344, Cl. 312-223.000.

Gillette, Thomas W.: *See—*
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Gilman, Michael G. Pole display construction. 3,683,527, Cl. 40-125.00g.

Ginzburg, Samuil Borisovich: *See—*
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Girard, Andre J., to Office Nationale d'Etudes de Recherches Aerospatiales. Interferometric device. 3,684,379, Cl. 356-106.00s.

Girden, Barney. Induced controlled upwelling. 3,683,627, Cl. 61-1.00r.

Giuliano, Michael N.; and Goins, Elwood W., to Westinghouse Electric corporation. Semiconductor switch device. 3,684,902, Cl. 307-303.000.

Glamorene Products Corporation: *See—*
Eisen, Howard; and Feighan, Joseph A., 3,684,576.

Glastrusions, Inc.: *See—*
Goldsworthy, William Brandt, 3,684,622.

Glav, Ola, to Carl Georg Munters. Process of drying air and apparatus intended therefor. 3,683,591, Cl. 55-34.000.

Glaverbel S.A.: *See—*
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,684,560.
Plumat, Emile; Bohain, Pierre; and Servais, Albert, 3,683,848.

Glay, Michael, to Societe Nouvelle Radial. Method for producing a heat exchanger. 3,683,478, Cl. 29-157.30b.

Gleason, Robert Joseph, to FMC Corporation. Purification of phosphoric acid. 3,684,438, Cl. 23-165.000.

Gleave, Paul Rogerson: *See—*
Doggart, John; and Gleave, Paul Rogerson, 3,683,845.

Gleaves, Donald H. Pilot hole enlarger. 3,684,393, Cl. 408-159.000.

Glenn, Robert. Dripless brush applicator construction. 3,684,387, Cl. 401-122.000.

Glicksman, Martin; Klose, Robert E.; and Kirkeby, Richard D. Method of making an extruded expanded protein product. 3,684,521, Cl. 99-17.000.

Globe-Union Inc.: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., 3,684,088.

Gluchowski, Alan, to American Flange & Manufacturing Co., Inc. Closure flange feed apparatus. 3,683,482, Cl. 29-208.00b.

Godbersen, Byron L. Mooring device for floating boat hoist. 3,683,838, Cl. 114-230.000.

Goddard, Wilson B.: *See—*
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Goehre, Otto: *See—*
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Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., to Kerr Glass Manufacturing Corporation. Method of coating glassware. 3,684,469, Cl. 65-60.000.

Goins, Elwood W.: *See—*
Giuliano, Michael N.; and Goins, Elwood W., 3,684,902.

Goldbach, Gunther; and Meyer, Heinz-Hermann, to Chemische Werke Huls Aktiengesellschaft. Molding compositions of polybutene-1. 3,684,760, Cl. 260-31.20r.

Goldberg, Norman. Light beam projection assembly for a word organized optic memory. 3,685,030, Cl. 340-174.0yc.

Golden, John R., to Gemco, Inc. System for automatically returning tape to a preselected position. 3,684,213, Cl. 242-201.000.

Goldschmidt, Th., AG: *See—*
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Goldschmied, Sandor F.: *See—*
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Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leonid Borisovich, 3,683,683.

Goldsworthy, William Brandt, to Glastrusions, Inc. Pultrusion machine. 3,684,622, Cl. 156-441.000.

Golovkin, Jury Ivanovich: *See—*
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Good, Arthur L., to Robertshaw Controls Company. Valve construction. 3,683,962, Cl. 137-609.000.

Goode, James K., Jr.: *See—*
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Goodnicht, Hershel: *See—*
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Goralczyk, Wilhelm: *See—*
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Gorton, Thomas S., Jr.: *See—*
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Gorzell, Keith E. Sprinkler system wheel structure. 3,684,180, Cl. 239-212.000.

Gosewinkel, Werner: *See—*
Voigt, Hans; Stoeck, Georg; Gosewinkel, Werner; and Kusch, Theodor, 3,684,573.

Gossel, Hartmut; Merkle, Kurt; Memmel, Feddinand; and Janousch, Erwin, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Pigment preparations to be used in non-aqueous systems and process for their manufacture. 3,684,542, Cl. 106-30.00q.

Goto, Masahiro; Noto, Tetsuo; Kato, Nitsuya; Kimura, Morio; and Watanabe, Tadashi, to Kansai Paint Company, Limited. Underwater anti-fouling coating composition. 3,684,752, Cl. 260-22.00r.

Gottesman, Martin; and Pascal, Fredric Davis. Method of reducing solid losses in freeze-concentration of coffee extract. 3,684,532, Cl. 99-199.000.

Grabauskas, Joseph J., to Union Carbide Corporation. Process for producing a formable collagen dispersion. 3,684,732, Cl. 252-311.000.

Grabhorn, Robert H., to Systematics, Inc. Apparatus for preparing blood specimens on slides. 3,683,850, Cl. 118-100.000.

Grace, John M. Board game apparatus. 3,684,288, Cl. 273-135.0ad.

Grachev, Leonip Palovich: *See—*
Duckhinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; and Grachev, Leonip Palovich, 3,683,586.

Grady, James C., to Gulf Oil Corporation. Method of retrieving marine life and mineral specimens from ocean's deepest parts. 3,683,699, Cl. 73-421.00r.

Graef, Arnold R., to Educational Tools, Inc. Circle maker apparatus. 3,683,505, Cl. 33-27.00b.

Graf, Carlton E., to General Electric Company. Firing signal transmission control means for inverter circuits. 3,684,936, Cl. 318-227.000.

Graff, Jerry C., to Schlumberger Technology Corporation. Well jar with externally operable trip release. 3,684,042, Cl. 175-302.000.

Grainger, John W., to Olympic General Products Proprietary Limited. Method of making reinforced belting. 3,684,606, Cl. 156-137.000.

Gramza, Eugene P.; and Schreiber, David D. Photoconductive cocrystalline complex of pyrylium dye and polymer used in electrophotography. 3,684,502, Cl. 96-1.600.

Granberg, Albert J. Positive displacement fluid translating device. 3,683,694, Cl. 73-259.000.

Grange, Howard L. Roof construction providing air flow from eave to ridge. 3,683,785, Cl. 98-35.000.

Granqvist, Carl-Erik, to AGA Aktiebolag. Digital distance measuring instrument. 3,684,375, Cl. 356-5.000.

Grant, Michael P., to Industrial Nucleonics Corporation. Single frequency moisture gauge with two- channel demodulation and feedback control of input. 3,684,953, Cl. 324-61.000.

Grantham, Frederick W.; and Mc Clain, Edward L. Laundry folder with wicket clamp. 3,684,274, Cl. 270-62.000.

Gray, Donald R.; and Miller, Donald J., to Addressograph-Multigraph Corporation. Master making control for duplicating machine. 3,683,803, Cl. 101-132.000.

Gray, Geoffrey T.: *See—*
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Gray Tool Company: *See—*
Hull, John L.; and Bridges, Charles D., 3,684,016.

Great Lakes Carbon Corporation: *See—*
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Greco, Francesco: *See—*
Longi, Paolo; Valvassori, Alberto; Greco, Francesco; and Bernasconi, Ermanno, 3,684,782.

Greim, Walter; deceased (by Brunotte, Helen, nee Vok Kap-Herr; heir). Device for detachably connecting wooden slats to junction element. 3,684,323, Cl. 287-20.92f.

Greiner, Norman Shirk; and Magee, James Vincent, to Johns-Manville Corporation. Method of treating the surface of textured cementitious sheet. 3,683,565, Cl. 51-326.000.

Greuter, Andre; and Korom, Arpad, to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hocheschule. Bistable multivibrator including special charging circuit for capacitive links for improved power to switching speed ratios. 3,68,900, Cl. 307-292.000.

Griffioen, Albert: *See—*
Van Der Veen, Romke; and Griffioen, Albert, 3,683,632.

Griffith, Albert M., III: *See—*
Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., 3,684,469.

Griffiths, Geoffrey William: *See—*
Maclagan, Robert Gordon; and Griffiths, Geoffrey William, 3,684,830.

Grigoriev, Viktor Ivanovich: *See—*
Lifshits, Viktor Senderovich; Grigoriev, Viktor Ivanovich; Petrov, Georgy Nikolaevich; and Papkov, Oleg Sergeevich, 3,684,856.

Gronbach, Wilhelm. Hinge assembly comprising a compression spring for compensating the weight of wings. 3,683,454, Cl. 16-190.000.

Gros, Hermann, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Reversing transmission with dual inputs. 3,683,719, Cl. 74-661.000.

Gros, Wilfred T. Plumb bob device. 3,683,510, Cl. 33-392.000.

Grot, Walther Gustav: *See—*
Coalson, Richard Leslie; and Grot, Walther Gustav, 3,684,747.

Groupement Atomique Alsacienne Atlantique (G.A.A.A.): *See—*
Malaval, Claude Rene Jean, 3,684,301.

Grove Manufacturing Company: *See—*
Sterner, Russell L., 3,684,324.

Groves, Richard N., Jr.; Cain, Robert L.; and Senn, Robert F., to Beatrice Foods Co. Electric barbeque unit. 3,683,792, Cl. 99-447.000.

Groves, William L., Jr.; and Huddleston, Robert L. Low-foaming surface active compositions and method of preparing such compositions. 3,684,736, Cl. 252-355.000.

Gruber, Wolfgang: *See—*
Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Thum, Waldemar; Gawehn, Karlfried; and Mollering, Hans, 3,684,659.

Guardian Electric Manufacturing Company: *See—*
Kaderbek, Charles J.; and Vojir, Franks, 3,684,850.

Guarnaccio, Anthony J.; and Dreyer, Robert N. Dimeric poly-n-vinyl carbazole organic photoconductor and photoconductive elements embodying same. 3,684,506, Cl. 96-1.600.

Gulf Oil Corporation: *See—*
Grady, James C., 3,683,699.

Gulf Research & Development Company: *See—*
Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., 3,684,748.
Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., 3,684,754.
Carr, Norman L.; Hamilton, Harry A.; and Schagrin, Edward F., 3,684,687.
Franke, Norman W.; and Singerman, Gary M., 3,684,753.
Matthews, Joseph S., 3,684,669.

Gulf States Paper Corporation: *See—*
Wolfe, George H., 3,684,159.

Gulick, Ronald A.: *See—*
Wicke, Charles H.; and Gulick, Ronald A., 3,684,844.

Gullett, William W., to Diamond Shamrock Corporation. Ferro alloy containing aluminum and manganese. 3,684,494, Cl. 75-134.00m.

Gumerman, Carl, to Du Pont de Nemours, E. I., and Company. Coating composition of fluorocarbon polymeric material and insulated electrical conductors coated therewith. 3,684,755, Cl. 260-17.00r.

Gunther, Adolph Peter; Hebel, Kenneth Gerard; and Kuck, Mark Allen, to Stauffer Chemical Company. Multiport sampling valve. 3,683,701, Cl. 73-422.0gc.

Gurton, Owen Allen: *See—*
Craig, William Allan; and Gurton, Owen Allen, 3,684,595.

Gusev, Leonty Fedorovich: *See—*

Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leonid Borisovich, 3,683,683.

H-2-O Filter Corporation, The: *See—*
O'Neil, Cyril F., Jr., 3,683,936.

Haak, Alfred Romuald; and Stichnoth, Wolfgang. Lubricating grease. 3,684,726, Cl. 252-33.200.

Haas, Friedrich: *See—*
Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, 3,684,781.
Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, 3,684,787.

Haas, William M.: *See—*
Sawyer, Elbert M.; and Haas, William M., 3,684,935.

Haase, Donald A., to Mobil Oil Corporation. Laminated thermoplastic foam-film dish. 3,684,633, Cl. 161-44.000.

Hagadorn, Margery F., to Honeywell Inc. Tape cleaning device. 3,683,445, Cl. 15-308.000.

Hagerty, Robert F. Plant container and method of growing a plant therein. 3,683,548, Cl. 47-38.100.

Hagino, Hiroshi: *See—*
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,684,652.

Hall, Hugh. Dispenser for tape material. 3,684,141, Cl. 225-65.000.

Hall, Russell W., Jr.: *See—*
Clauset, Alvin O., Jr.; Hoyt, Donald L.; and Hall, Russell W., Jr., 3,684,872.

Hallewell, Bernard Frederick, to Toolmasters Limited. Form copying method and apparatus. 3,683,560, Cl. 51-100.00r.

Hallman, Newt M., to Universal Oil Producting Company. Method for conditioning a wet regenerated platinum reforming catalyst. 3,684,698, Cl. 208-140.000.

Hallmark Cards, Incorporated: *See—*
Kolster, Edward J.; and Ira, George O., 3,683,484.

Hallstein, Edward: *See—*
Kurtz, Leonard; Bidwell, Robert; Mishkin, Sidney; and Hallstein, Edward, 3,683,913.

Halopoff, William; and Baker, Larry W., to Holmes Hardware & Sales Co. Center lock inside handle keeper. 3,683,652, Cl. 70-146.000.

Halt, Ira E.: *See—*
Collins, Neil E.; and Halt, Ira E., 3,684,930.

Halverson, Phillip C.: *See—*
Sherer, Paul; and Halverson, Phillip C., 3,685,047.

Hamilton, Harry A.: *See—*
Carr, Norman L.; Hamilton, Harry A.; and Schagrin, Edward F., 3,684,687.

Hamilton, Stoddard C., III, to General Motors Corporation. Lock-up device for coupling or converter. 3,684,064, Cl. 192-3.310.

Hammelehle, Wilfried: *See—*
Gehring, Gerhard; and Hammelehle, Wilfried, 3,684,972.

Hammer, Clarence Frederick, to Du Pont de Nemours, E. I., and Company. Polymers of ethylene, sulfur dioxide and ethylenic monomers. 3,684,778, Cl. 260-79.30a.

Hammer, Theodror: *See—*
Engler, Otto; Hammer, Theodror; and Muler, Meinhard, 3,684,619.

Hammond Machinery Builders, Inc.: *See—*
Colwell, Lester V., 3,684,673.

Hammond, Michael J.; and Herner, Raymond F., to Sylvania Electric Products, Inc. Method of treating luminescent rare earth oxide materials. 3,684,546, Cl. 177-33.50c.

Hamner, Glen P.: *See—*
Arey, William F.; Hamner, Glen P.; Mason, Ralph B.; and Rigney, James A., 3,684,691.

Hanazwa, Teruo: *See—*
Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, 3,684,514.

Hancock, Charlie L., to Westinghouse Electric Corporation. Latch switch arrangement for diswasher. 3,684,343, Cl. 312-223.000.

Hankins, Glen W. Method and means for selectively crushing aggregate. 3,684,196, Cl. 241-14.000.

Hans List: *See—*
Fachbach, Heinz; and Thien, Gerhard, 3,684,053.

Hanson, Francis V.; and Snyder, Paul W., Jr., to Mobil Oil Corporation. Method of controlling interaction between pretreating and hydrocracking stages. 3,684,694, Cl. 208-89.000.

Hanssen, Ernstgeorg Albert, to Werner Bahlsen. Method of producing pastry from doughs of low water content. 3,684,525, Cl. 99-92.000.

Hansson, Curt: *See—*
Hermansson, Bo; and Hansson, Curt, 3,684,945.

Happ, Marvin B.; and Harper, James G., to Texas Instruments, Incorporated. Composite metal laminate material and lead frame. 3,684,464, Cl. 29-191.600.

Haraszti, Tegze. Dynamic circuit arrangements. 3,684,903, Cl. 307-304.000.

Harbisch, Heinrich. Spring-loaded coupling for seagoing vessels. 3,683,839, Cl. 114-235.000.

Harden, Kendall L., to Procter & Gamble Company, The. Self-centering spraying apparatus. 3,683,547, Cl. 47-1.700.

Harding, John W.: *See—*
Buntin, Robert R.; Harding, John W.; Keller, James P.; and Murdock, Vollie L., 3,684,415.

Hardtl, Karl Heinz: *See—*
Carl, Klaus Fredrich Leonhard; and Hardtl, Karl Heinz, 3,684,714.

Harless, Charles A., to Harris-Intertype Corporation. Liquid handling mechanism. 3,683,805, Cl. 101-350.000.

Harlin, Lester E.; and Tothero, Dwight L., to Borg-Warner Corporation. Oil separator for rotary compressor. 3,684,412, Cl. 418-89.000.

Harman, Ward A.: *See—*
James, Bertram G.; Harman, Ward A.; and Ruetz, John A., 3,684,913.

Harms, Alan: *See—*
Harms, Eric F., 3,684,282.

Harms, Eric F., to Harms, Alan. Hand and foot operated swing. 3,684,282, Cl. 272-87.000.

Harper, James G.: *See—*
Happ, Marvin B.; and Harper, James G., 3,684,464.

Harrington, Francis E.: *See—*
Pase, John D.; and Harrington, Francis E., 3,683,975.

Harris, Billy G.: *See—*
Leiano, Don H.; and Harris, Billy G., 3,683,453.

Harris, Cary D. Container and method for dispensing articles. 3,684,158, Cl. 229-17.0rs.

Harris, David S., to Owens-Illinois, Inc. Leak detector. 3,683,677, Cl. 73-49.200.

Harris, Harold B.: *See—*
Robins, Jack; and Harris, Harold B., 3,684,597.

Harris, Jesse W.: *See—*
Keppler, John E.; and Harris, Jesse W., 3,683,763.

Harris, Lynn C. Waste compressor. 3,683,795, Cl. 100-53.000.

Harris, Roy M., to Battelle Development Corporation, The, mesne. Device for the extraction of core samples. 3,683,892, Cl. 128-2.00b.

Harris-Hub Company, Inc.: *See—*
Mis, Frank J., 3,683,429.

Harris-Intertype Corporation: *See—*
Conroy, Thomas P.; Fredrickson, Walter G.; and Thrailkill, Howard A., 3,685,019.
Harless, Charles A., 3,683,805.

Harrison, Allen W., to International Paper Company. Tissue and warpper for dispensing tissues. 3,684,086, Cl. 206-46.00r.

Harrold, Marshall C., to General Motors Corporation. Pressure compensating timed fluid fill system. 3,683,964, Cl. 137-624.110.

Harrold, Ronald T., to Westinghouse Electric Corporation. Methods of corona location utilizing three phase voltage distribution patterns. 3,684,951, Cl. 324-52.000.

Hart, Richard T., to Science associates, Inc. Display apparatus. 3,685,040, Cl. 340-334.000.

Hartmann, Leonard; and Sciuto, Joseph S., Jr., to Stile-Craft Manufacturers, Inc. Ball valve. 3,684,241, Cl. 251-315.000.

Hartmann, Lothar, to Siemens Aktiengesellchaft. Method for the synchronization of oscillators pertaining to at least two long distance communication network systems. 3,684,837, Cl. 179-15.0bs.

Hartmann, Ludwig. Method and apparatus for determining the biochemical decomposability of sewage. 3,684,702, Cl. 210-3.000.

Harvey, Richard George: *See—*
Morley, Frederick William Walton; Bennett, George Henry; Harvey, Richard George; and Wilson, Alan, 3,684,857.

Hasegawa, Hiroaki; Kasai, Kouhei; Namizuka, Toshio; and Moriguchi, Katsuo, to Japanese Geon Company, Ltd., The. Process for the production of cis-1,4-polyisoprene. 3,684,785, Cl. 260-85.300.

Hashimoto, Takesaburo, to Hitachi-Ltd. Rotor device housing for analytical ultracentrifuge. 3,684,163, Cl. 233-1.00b.

Hass, Hyman, to Applied-Fluidics, In. Fluidic leak detector. 3,683,676, Cl. 73-45.100.

Hassel, Harald. Counter-blow hammer with a hammer drive. 3,683,666, Cl. 72-407.000.

Hatcher, Donald W., Sr. Motor system and method for manipulating liquid matter. 3,683,973, Cl. 141-1.000.

Hathaway Instruments, Inc.: *See—*
Bright, James A.; and Wilson, Craig L., 3,684,964.

Hauffe, William L.; and Finney, Robert R., to Mueller Co. Soft seated rotary valve. 3,684,242, Cl. 251-317.000.

Hauptmann, Karl Heinz: *See—*
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,684,798.

Hauptmann, Maria: *See—*
Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz, 3,684,798.

Hauser, Raimund: *See—*
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Hausslein, Robert W.: *See—*
Lysaght, Michael J.; and Hausslein, Robert W., 3,684,580.

Hawkins Mfg., Inc.: *See—*
Hawkins, Roy I., 3,684,032.

Hawkins, Roy I., to Hawkins Mfg., Inc. Replaceable blade combination for chisel blade. 3,684,032, Cl. 172-720.000.

Hayashi, Koichtro: *See—*
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Iwai, Tadashi; Miura-Gun, Kanagawa-Ken; Hayashi, Koichtro; and Okamura, Seizo, 3,684,767.

Hayne, Thomas F.; and Whited, Charles A., to Xerox Corporation. Photosensitive misfeed detector. 3,684,890, Cl. 250-223.000.

Hayward, Richard E., Jr., to Phillips Petroleum Company. Method of producing a soft outer surface of fine denier fiber on a nonwoven fabric. 3,684,601, Cl. 156-148.000.

Heacox, Russel L., to P & Z Co., Inc. Apparatus for actuating clam shell bucket. 3,684,040, Cl. 175-202.000.

Hebel, Kenneth Gerard: *See—*
Gunther, Adolph Peter; Hebel, Kenneth Gerard; and Kuck, Mark Allen, 3,683,701.

Heck, Friedrich. Process for sinter cladding metal supports. 3,684,498, Cl. 75-208.000.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Altitude alerting apparatus. 3,685,034, Cl. 340-181.900.

Hedrick, Warren R., to Allied Thermal Corporation. Operating device for register valve. 3,683,786, Cl. 98-110.000.

Heimberger, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 2(d-Methyl-2 hydroxy)-ethyl-4-morpholino-6-trichloromethyl-5-triazine. 3,684,806, Cl. 260-247.50r.

Heimlicher, Paul, to Maschinenfabrik Winkler, Fallert & Co., AG. Device for removing copies from normal path of travel. 3,684,279, Cl. 271-64.000.

Heitzman, Charles J. Storage system for molded articles. 3,683,467, Cl. 25-133.000.

Helfgen, Werner: *See—*
Rohde, Wilhelm; and Helfgen, Werner, 3,683,742.

Helical Line Products Co.: *See—*
Bonds, Albert C., 3,684,221.

Helmrich, William F., to Ex-Cell-O Corporation. Aerating fuel nozzle. 3,684,186, Cl. 239-400.000.

Henderson, William E.; and Ross, Camilla B. Freezing-mixing process. 3,684,540, Cl. 106-164.000.

Hennessy, James J., Jr.; and Bollinger, Luther L., Sr., to Hennessy Products, Incorporated. Railway axle journal stop. 3,684,331, Cl. 308-40.000.

Hennessy, John A.: *See—*
Soraci, Oreste; and Hennessy, John A., 3,684,074.

Hennessy Products, Incorporated: *See—*
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Hennessy, James J., Jr.; and Bollinger, Luther L., Sr., 3,684,331.

Henry, Dominique, to Thomson-CSF. Telecommunication repeater traveling wave tube, frequency converting. 3,684,963, Cl. 325-11.000.

Henry, Nelson R., to Woodman Company, The, Inc. Vibrating clamp product settler with interrupter. 3,684,254, Cl. 259-72.000.

Hepner, Neal; and Williamson, Albert C., to Burroughs Corporation. Endless type carrier belt having type-receiving pockets in an edge thereof. 3,683,802, Cl. 101-111.000.

Heppes, Aladar: *See—*
Bennett, Anthony B.; and Heppes, Aladar, 3,685,037.

Herbstman, Sheldon; and Peck, Reese A., to Texaco Inc. Process for improving the gel strength and flow properties of crude oil. 3,684,685, Cl. 208-37.000.

Herbstman, Sheldon; and Peck, Reese A., to Texaco Inc. Process for obtaining low pour fuel oil. 3,684,686, Cl. 208-37.000.

Hercules Incorporated: *See—*
Burkle, William C., 3,683,809.
Driscoll, Hiram E., 3,683,811.
Evans, Richard H., 3,684,594.
Jackson, David B., 3,684,142.
Pilcher, Frank C., 3,684,421.

Herman, Martin A. Centering and holding fixture. 3,684,302, Cl. 279-75.000.

Hermansson, Bo; and Hansson, Curt, to Allmanna Svenska Elektriska Aktiebolaget. Reversible converter. 3,684,945, Cl. 321-13.000.

Hermsdorf, Horst: *See—*
Psencik, Erich; Hermsdorf, Horst; and Vltavsky, Horst, 3,684,565.

Herner, Raymond F.: *See—*
Hammond, Michael J.; and Herner, Raymond F., 3,684,546.

Herremans, Pieter Gommer. Photographic colour correction method. 3,684,501, Cl. 96-5.000.

Herrett, Wilfred H., to Acme Manufacturing Company, Inc. Planting machine and size-adjustable hopper therefor. 3,683,829, Cl. 111-73.000.

Herrick, Frank T.: *See—*
Reuter, Floyd W.; and Herrick, Frank T., 3,684,026.

Hertig, Jean: *See—*
Bischof, Jose; Litzler, Alfred; Hertig, Jean; and Milicevic, Branimir, 3,684,431.

Heugebaert, Frans Clement: *See—*
Van den Heuvel, Walter August; Vanhalst, Johan Eugeen; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,684,509.

Heuze, Bernard Marie Louis, to Societe d'Etudes Contre La Corrosion (SECC). Electrodes for electrolytic or cathodic anti-corrosion protection. 3,684,680, Cl. 204-196.00.

Hickman, Ella Sue: *See—*
Fredrickson, James D.; and Hickman, Ella Sue, 3,683,937.

High Voltage Power Corporation: *See—*
Trump, John George; Skillicorn, Brian; and Johnson, Byron Lee, 3,684,991.

Hight, Roland W.: *See—*
Levine, Morris; Brane, Ralph M.; and Hight, Roland W., 3,684,676.

Hikida, Ryotaro; Awano, Taikichi; Itoh, Junichiro; Danno, Atsushi; Matsui, Masao; Inaba, Mitigi; and Isogai, Mituyuki. Vibratory impact bender. 3,683,659, Cl. 72-150.000.

Hillenbrand, Bernhard: *See—*
Wilhelm, Manfred; and Hillenbrand, Bernhard, 3,684,495.

Hillers, Theo, to Dynamit Nobel AG. Insulating substrate for high-frequency welding. 3,684,640, Cl. 161-114.000.

Hinachi, Matatoyo; and Mori, Toyoshi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electric motor. 3,684,907, Cl. 310-155.000.

Hinckley, John N., to Beloit College. Engine. 3,684,413, Cl. 418-141.000.

Hirai, Hidefumi: *See—*
Makishima, Shoji; Hirai, Hidefumi; Tomiie, Kazuo; and Kudo, Tetsuichi, 3,684,578.

Hirata, Itsuro: *See—*
Yagi, Yoshiharu; Kobayashi, Akira; and Hirata, Itsuro, 3,684,789.

Hire, Charles John, to Trane Company, The. Apparatus for calibrating thermostatic switches. 3,683,654, Cl. 72-30.000.

Hirsch, Roger D., to Bangor Punta Operations, Inc. Having articulated bogey wheel suspension means. 3,684,043, Cl. 180-5.00r.

Hirschburger, Kurt, to Eugen Hirschburger KG. Device for treating strand-like material. 3,683,650, Cl. 68-5.00d.

Hisatsune, Tomio: *See—*
Uchiyamada, Kameo; Sato, Kazuo; and Hisatsune, Tomio, 3,684,309.

Hitachi,, Ltd.: *See—*
Hojo, Toku; Matui, Takao; and Kimura, Rikiti, 3,684,384.
Kumada, Akio, 3,684,351.
Oshima, Ryoichiro; Miyamoto, Seigo; Kanemoto, Kazuo; and Ichikawa, Michio, 3,683,637.
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Hitachi-Ltd.: *See—*
Hashimoto, Takesaburo, 3,684,163.

Hitzel, Charles F., to Diamond Shamrock Corporation. Removal of conductive coating from dimensionally stable electrodes. 3,684,577, Cl. 134-2.000.

Hochtief A.G. fur hoch-und Tiefbauten vorm. Gerb. Helfmann: *See—*
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Hoehn, Rudolph; and Jadatz, Harald B., to Slater Electric, Inc. Tap switch. 3,684,847, Cl. 200-67.00a.

Hoerres, William E.: *See—*
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Hofer, Franz; and Schuler, Claus, to Aktiengesellschaft Brown, Boveri & Cie. Method for producing inter metallic compound permanent magnet material. 3,684,499, Cl. 75-211.000.

Hoffman, Helen B.: *See—*
Stehlin, Theodore A., 3,684,240.

Hoffman, Lewis Charles, to Du Pont de Nemours, E. I., and Company. Bismuthate glass-ceramic precursor compositions. 3,684,536, Cl. 106-53.000.

Hoffmann, Karl-Heinz: *See—*
Hundhausen, Eckhard; and Hoffmann, Karl-Heinz, 3,684,321.

Hoffmann, Richard. Electric heat sealing machine. 3,684,620, Cl. 156-380.000.

Hoffmann, Viktoria. Heating container. 3,683,889, Cl. 126-263.000.

Hoffmann-La Roche, Inc.: *See—*
Brossi, Arnold; and Teitel, Sidney, 3,684,810.

Hofman, Emiel Alexander; and Vandeputte, Camille Angelina. Silver complex diffusion transfer process. 3,684,508, Cl. 96-29.000.

Hojo, Toku; Matui, Takao; and Kimura, Rikiti, to Hitachi,, Ltd. Positioning arrangement and face down bonder incorporating the same. 3,684,384, Cl. 356-172.000.

Holder for license plates and signs: *See—*
Reed, Ray, 3,683,529.

Hollwedel, Henry C., Jr., to George Lithograph Company. Machine for making prints from microfilm fiche. 3,684,366, Cl. 355-5.000.

Holly, James A., to Hollymatic Corporation. Toothbrush. 3,683,442, Cl. 15-167.00r.

Hollymatic Corporation: *See—*
Holly, James A., 3,683,442.

Holm, Burton J. Structural connections for building constructions. 3,683,569, Cl. 52-93.000.

Holmes Hardware & Sales Co.: *See—*
Halopoff, William; and Baker, Larry W., 3,683,652.

Holter, John W., to Extracorporeal Medical Specialties, Inc. Device for draining cerebrospinal fluid in cases of hydrocephalus. 3,683,929, Cl. 128-350.00v.

Homa, George D.; Kindy, Ronald J.; and Miller, Earl D., to Akron Standard, division of Eagle-Picker Industries Inc. Control system for tire building. 3,684,877, Cl. 235-154.000.

Homma, Ku, to Akai Electric Co., Ltd. Magnetic transducer head with separable pole tips. 3,684,839, Cl. 179-100.0zc.

Homuth, Horst; Feess, Erich; and Schidlo, Wolfram, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for printing textile materials of natural or regenerated cellulose with reactive dyestuffs. 3,684,428, Cl. 8-62.000.

Honeywell Inc.: *See—*
Boehme, Robert M., 3,684,841.
Eachus, Joseph J., 3,685,016.
Hagadorn, Margery F., 3,683,445.
Srivastava, Keshava; and Agrawala, Ashok K., 3,685,033.

Honig, Hans Ludwig; Suling, Carlhans; Dieterich, Dieter; and Rebohl, Artur, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of modified cationic emulsion polymers with cationic polyurethane. 3,684,758, Cl. 260-29.6nr.
Hooker Chemical Corporation: *See—*
Emerson, William E., 3,684,534.
Geering, Emil J.; Shatz, Malcolm H.; and Leon, Edward, 3,684,587.
Hopkins, Herbert J. Acoustic duct speaker system. 3,684,051, Cl. 181-31.00b.
Horin, Shoji: *See—*
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Horton, William E., III, to Westinghouse Electric Corporation. Electrical bushing assembly. 3,684,995, Cl. 337-224.000.
Horvath, Tibor. Optical display device. 3,683,526, Cl. 40-68.000.
Hotta, Yoshitsugu: *See—*
Matsui, Toshiji; Amano, Yasuhiko; Hotta, Yoshitsugu; and Mitabe, Tsutomu, 3,683,784.
Hottel, Hoyt C., Jr., to Sippican Corporation, The. Retransmitting system for use in locating remote signals. 3,684,962, Cl. 325-9.000.
Hottendorf, William J., to Ametek, Inc. Paperboard container labeling machine. 3,684,627, Cl. 156-578.000.
Houck, Theodore B. Duo-block safety device. 3,684,244, Cl. 254-173.00r.
Hougen, Leif Reidar; and Stensholt, Erling Olav, to Falconbridge Nickel Mines, Limited. High purity nickel product. 3,684,481, Cl. 75-.5ba.
Houghton, Graham K.; and Humphreys, Wendell L. Counterweight bag tensioning device. 3,683,595, Cl. 55-302.000.
House, Chas. W., & Sons, Incorporated: *See—*
Tranfield, George, 3,684,284.
Howlett, Donald L., to Texaco Inc. Seismic playback/monitor system. 3,685,046, Cl. 340-347.0da.
Hoyt, Donald L.: *See—*
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Hozumi, Shiro: *See—*
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Wakabayashi, Takashi; and Hozumi, Shiro, 3,685,028.
Hraby, John O., Jr., to Rain Jet Corporation. Reverberating liquid discharge device having random discharge pattern. 3,684,175, Cl. 239-22.000.
Hruby, John O., Jr., to Rain Jet Corporation. Pulsation impact spray nozzle. 3,684,176, Cl. 239-101.000.
Hsiao, Mu-Yue; and Mikhail, Wadie F., to International Business Machines Corporation. Automatic double error detection and correction device. 3,685,014, Cl. 340-146.1al.
Hsu, Harry L., to Great Lakes Carbon Corporation. Fuel briquets and their method of manufacture. 3,684,465, Cl. 44-10.000.
Hubbell, Harvey, Incorporated: *See—*
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Hudson Products Corporation: *See—*
Davidson, Eugene M.; and Monroe, Robert C., 3,684,398.
Huesing, Heinz, to Voith, J. M., GmbH., Firma. Fishtail die for producing thermoplastic films and sheets. 3,684,422, Cl. 425-466.000.
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Hughes, James D., 1/4 to Breston, Michael P. Educational and recreational device. 3,683,514, Cl. 35-19.00r.
Hughes, Robert W., to Ingersoll-Rand Company. Hydulic centralizer. 3,683,466, Cl. 24-249.0dp.
Hugonin, Gerald H., to Schlumberger Technology Corporation. Apparatus for inspecting tubular goods having an automatic shelter. 3,684,887, Cl. 250-83.30d.
Huguet, Michel; Rebut, Paul-Henri; and Torossian, Antoine, to Commissariat a l'Energie Atomique. Production of magnetic coils for the creation of intense fields. 3,684,992, Cl. 336-58.000.
Hull, John L. Screw driver holder. 3,683,984, Cl. 145-62.000.
Hull, John L.; and Bridges, Charles D., to Gray Tool Company. Method and apparatus for installing an insertable hanger shoulder ring in a wellhead. 3,684,016, Cl. 166-315.000.
Hull, Nadeau: *See—*
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Humphrey Elevator and Truck Company: *See—*
Underwood, Timothy J., 3,683,898.
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Humphrey, William E., 3,684,374.
Humphrey, William E., to Humphrey Research Associates, mesne. Focus detector. 3,684,374, Cl. 356-4.000.
Humphreys, Wendell L.: *See—*
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Humphriss, Wesley D.; and Bartlett, Lawrence C., to Eastman Kodak Company. Electrophotographic elements containing electrically conducting solid dispersions. 3,684,503, Cl. 96-1.590.
Hundhausen, Eckhard; and Hoffmann, Karl-Heinz. Coupling for tubes. 3,684,321, Cl. 284-316.000.
Hunter, Albert A. J. Spirit transfer means for hand operated address printing machines. 3,683,804, Cl. 101-133.000.
Hurd, Stanley E. Apparatus for conveying articles along a pnuematic channel. 3,684,327, Cl. 302-2.00r.
Hurst, Robert Norman, to RCA Corporation. System for record medium control and editing. 3,684,826, Cl. 178-6.60p.
Hyde, Gilbert F.; and Le Gates, Ralph W., to Westinghouse Electric Corporation. Variable force angle linkage. 3,684,237, Cl. 251-58.000.
Hydraudyne N.V.: *See—*
Stuyvenber, Franciscus D., 3,683,754.
Hymatic Engineeng Company Limited, The: *See—*
Ashley, Kenneth, 3,683,596.
Hynam, Brian Michael; Wilby, John Leslie; and Young, John Ralph, to Lever Brothers Company. Thickened alkali metal hypochlorite bleaching and cleaning composition. 3,684,722, Cl. 252-98.000.
I-T-E Imperial corporation: *See—*
Zubaty, Martin, 3,684,849.
Ichikawa, Michio: *See—*
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Ichinose, Noboru; Egami, Harutoshi; Yokohama, Katsunori; and Yamashita, Yohachi, to Tokyo Shibaura Electric Co., Ltd. Piezoelectric oxide materials. 3,684,715, Cl. 252-62.900.
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IIG Industries, Inc.: *See—*
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Ikegami, Yoshio: *See—*
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Iketani, Taisho. Device for automatically and periodically spraying pressurized liquid. 3,684,133, Cl. 222-54.000.
Ikeuchi, Hiroshi, to Denki Onkyo Company Limited. Convergence apparatus for use in color television cathode ray tubes. 3,684,989, Cl. 335-210.000.
Iltis, Charles O., to Kimberly-Clark Corporation. Method of making a two-sided towel. 3,684,603, Cl. 156-152.000.
Immel, Ralph B.; and Collins, James D., to Westinghouse Electric Corporation. Indicator light-resistor mounting assembly. 3,685,049, Cl. 340-381.000.
Imperial chemical Industries Limited: *See—*
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Iriondo, Joaquin M. Atomosphere analyzer working by variation of the combustion front. 3,683,670, Cl. 73-25.000.
Irmscher, Klaus; and Orth, Dieter, to E. Merck Aktiengesellschaft. Diepoxide process for the preparation of 9a-fluoro-16-methyleneprednisolone or-prednisone, and 21-esters thereof. 3,684,800, Cl. 260-239.550.
Irontite Products Co., Inc.: *See—*
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Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Iwai, Tadashi; Miura-Gun, Kanagawa-Ken; Hayashi, Koichtro; and Okamura, Seizo, to Japan Atomic Energy Research Institute. Method for preparing polyoxymethylene. 3,684,767, Cl. 260-67.0fp.
Ito, Katsunori: *See—*
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Ito, Yoshio; Katayama, Hajime; Yamaguchi, Masaru; and Nitanda, Hiroshi, to Canon Kabushiki Kaisha. Device for separating recording medium for use in electrophotographic copying machines. 3,684,363, Cl. 355-3.000.
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Franke, Kurt; and Steffen, Hermann, 3,684,335.
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Iura, Yukio, to Canon Inc. Apparatus to determine an amount of exposure. 3,683,765, Cl. 95-10.00c.
Ivan, Patrick Crowley. Personal sanitary appliance. 3,683,914, Cl. 128-285.000.
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, to Vsesojuzny Nauchno-Issledovatelsky i proektny institt Aljuminievoi magnievoi i elektrodnoi promyshlennos. Apparatus for reduction of titanium halides and subsequent vacuum separation of reduction products. 3,684,264, Cl. 266-9.000.
Iwahashi, Koji; Ueda, Kenji; and Katsuta, Kihei, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for paper manufacture. 3,684,672, Cl. 204-128.
Iwai, Tadashi: *See—*
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Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic emulsions. 3,684,514, Cl. 96-100.000.
Iwine Findley Limited: *See—*
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Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Stabilizer for archery bow. 3,683,883, Cl. 124-30.00r.
Jackson, David B., to Hercules Incorporated. Adjustable beater bar. 3,684,142, Cl. 225-97.000.
Jackson, Harold Ernest, to Petrol Injection Limited. Fuel injection systems. 3,683,870, Cl. 123-32.0ea.
Jackson, Winston J., Jr.; Kuhfuss, Herbert F.; and Caldwell, John R., to Eastman Kodak Company. Process for enhancing the inherent viscosity of bisphenol polyesters. 3,684,766, Cl. 260-47.00c.
Jacobson, Gunnar; and Olsson, Olof Bertil, to Aktiebolaget Bofors. Missile. 3,684,215, Cl. 244-3.270.
Jadatz, Harald B.: *See—*
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Jagenberg-Werke AG: *See—*
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Jaggers, Henry T.; and Theado, Donald R., to Industrial Nucleonics Corporation. Single frequency moisture gauge with logarithmic feedback. 3,684,954, Cl. 324-61.000.
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Jakobi, Wilhelm, to Bautz, Josef, GmbH. Releasable cutter platform for a self-propelled combine harvester. 3,683,605, Cl. 56-228.000.
James, Bertram G.; Harman, Ward A.; and Ruetz, John A., to Varian Associates. Coupled cavity slow wave circuit for microwave tubes. 3,684,913, Cl. 315-3.500.
Janostik, Jaroslav: *See—*
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Janousch, Erwin: *See—*
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Jansen, Robert A., to Westinghouse Electric Corporation. Refrigerator cabinet structure. 3,684,342, Cl. 312-214.000.
Janson, Stig; and Janson, Ulf Stig. Milking installation for cow stables. 3,683,856, Cl. 119-14.110.
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Jenkins, Carlton G., to Sylvania Electric Products Inc. Rectilinear feed apparatus. 3,684,145, Cl. 226-173.000.
Jensen, Ellsworth O.: *See—*
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Jensen, Leif Egon. Demodulator for frequency shift modulated signals. 3,684,969, Cl. 329-104.000.
Jerabek, Jan: *See—*
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Jerobee Industries, Inc.: *See—*
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Jerrold-Jones, Paul, to Beckman Instruments, Inc. Cable connector. 3,685,006, Cl. 339-117.00r.
Jochim, La Vergne C., to Ti-Mind Incorporated. Retarded clock device with pin ball type switch actuators. 3,684,843, Cl. 200-35.00r.
Jochmann, Leonard, to International Standard Electric Corporation. Method of and an apparatus for determining the bond strength between the metallic sheath and the non-metallic jacket of a cable. 3,683,682, Cl. 73-88.00b.
Johan, Bengt Olof; and Morner, Stellan, to Mediplast AB. Apparatus for destroying hypodermic needles, needle-equipped ampules, hypodermic syringes and the like. 3,683,733, Cl. 83-199.000.
Johansen, Alfred M. Shirt button accessory. 3,683,459, Cl. 24-40.000.
Johansson, Arnold Johannes, to Aktiebolaget Bofors. Device for particularly continuous checking and/ or indication of curvatures arising in gun barrels. 3,684,383, Cl. 356-154.000.
Johmann, Frank T. Dice throwing doll. 3,684,291, Cl. 273-145.00r.
John, Ronald: *See—*
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Johnsen, Leif, to A/S Raufoss Ammunisjonsfabrikker. Joints for high tension lines, cables and the like. 3,684,820, Cl. 174-90.000.
Johnsen, Vernon L.; and Burnett, Raymond S., to Wilson Pharmaceutical & Chemical Corporation. Proteinaceous cosmetic material for hair conditioning. 3,683,939, Cl. 132-7.000.
Johnson & Johnson: *See—*
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Mesek, Frederick K.; and Rapkl, Virginia L., 3,683,916.
Johnson, Bruce K., to Polaroid Corporation. Camera system for recording plurality of images on a photographic sheet. 3,683,764, Cl. 95-1.100.
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Johnson, Gary R.: *See—*
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Johnson, Harold R., to Johnson, H. R., Construction Co., Inc. Luggage carrier and boat structure. 3,684,139, Cl. 224-42.010.
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Johnson, Howard R., to Kelsey-Hayes Company. Friction lining composition. 3,684,062, Cl. 188-251.00r.
Johnson, Jesse R., to AVM Corporation. Dual diaphragm short travel actuator. 3,683,753, Cl. 92-48.000.
Johnson, Philip Charles; and Theumer, Christoph Rudolf Emil Johnann, to British Railways Board. Ultrasonic flaw detection apparatus. 3,683,680, Cl. 73-67.700.
Johnson, Ray. Wallboard joint blade. 3,683,496, Cl. 30-169.000.
Johnson, Rowland S.: *See—*
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Johnston, Harlin D.; and Fury, Roy C., to Phillips Petroleum Company. Producing hydrogen by contact of steam with iron oxide promoted with zinc ferrite. 3,684,447, Cl. 23-214.000.
Johnston, Roy C., to Texas Instruments, Incorporated. Method and apparatus for acoustic energy generation in marine exploration. 3,684,050, Cl. 181-.50h.
Jolly, James G.: *See—*
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Jones, Richard Norman; Armand, Joseph Marcel; and Hull, Nadeau. Fluid transfer apparatus. 3,683,978, Cl. 141-285.000.
Josten, Friedrich; and Lucker, Willi, to Deutsche Texaco Aktiengesellschaft. Acylated alcoholates of polyvalent metals. 3,684,566, Cl. 117-135.500.
Joynson, Sidney Edmund, to Wickman Wimet Limited. Toolholders with detachable cutting inserts. 3,683,473, Cl. 29-96.000.
Jozumi, Sumio; and Kogaki, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmissions. 3,683,721, Cl. 74-869.000.
Judlowe, Stephen B. Measuring apparatus employing variable frequency transducer. 3,683,684, Cl. 73-136.00a.
Jufer, Frederic. Dry-charged storage battery having an electrolyte reservoir and the battery case combined in a unit. 3,684,581, Cl. 136-162.000.
Juna, Kiyoshi; and Tsuchiya, Masuo, to Kansai Paint Company, Limited. Composition for electrosenstitive recording paper. 3,684,746, Cl. 252-507.000.
Junkins, Ernest M. Automatic guiding apparatus for sewing machine. 3,683,831, Cl. 112-121.012.
Juppert, Paul, to Societe Rhodiaceta. Yarn handling pneumatic device. 3,683,732, Cl. 83-100.000.
Juppet, Paul, to Societe Rhodiaceta. Process and device for transfer of textile yarn at high speed. 3,684,143, Cl. 226-97.000.
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Kaderbek, Charles J.; and Vojir, Franks, to Guardian Electric Manufacturing Company. Programmable lever switch with snap-in detachable cam detent means. 3,684,850, Cl. 200-166.0sd.
Kadowaki, Tatsusuke, to Kabushiki Kaisha Ricoh. Automatic film feed device for small movie projectors using a film cartridge. 3,684,210, Cl. 242-192.
Kah, Paul: *See—*
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Kahle, Klaus: *See—*
Doring, Gunter; Kahle, Klaus; and Schneider, Dietmar, 3,684,650.
Kahn, Leonard R., to Kahn Research Laboratories, Inc. Single channel audio signal transmission system. 3,684,838, Cl. 179-15.550.
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Kahn, Leonard R., 3,684,838.
Kaiser, Carl; and Zirkle, Charles L. Benzoheterocyclicalkyl derivatives of 2,4, 9-triazaspiro (5,5) undecan-1,3,5-trione. 3,684,812, Cl. 260-256.50r.
Kalish, Arthur. Adjustable gage for sewing machines. 3,683,508, Cl. 33-185.00r.
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Kalverboer, Cornelis, to Aktiengesellschaft Brown, Boveri & Cie. Arrangement for protecting a steam treatment device. 3,683,620, Cl. 60-73.000.
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Kalwaites, Frank, to Johnson & Johnson. Apparatus for producing perforated sheet material. 3,683,559, Cl. 51-74.000.
Kamamazuka, Isezi; and Ohiwa, Katsuhiko, to Nippon Denso Kabushiki Kaisha. Fuel injection control system for internal combustion engines. 3,683,869, Cl. 123-32.0ea.
Kamentsky, Louis A.: *See—*
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Kamm, Gerard R.; and Young, Charles H., to Union Carbide Corporation. Inhibition of polymerization on molecular sieves. 3,683,592, Cl. 55-75.000.
Kammerer, Archer W., Jr.; and Johnson, Gary R., to Baker Oil Tools, Inc. Expansible rotary drill bit. 3,684,041, Cl. 175-267.000.
Kane, John Robert. Chess game apparatus. 3,684,285, Cl. 273-131.0ac.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
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Juna, Kiyoshi; and Tsuchiya, Masuo, 3,684,746.
Kansas State University Research Foundation: *See—*
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Kanzelberger, James C. Container. 3,684,084, Cl. 206-45.310.
Kao Soap Co., Ltd.: *See—*
Arai, Haruhiko; and Horin, Shoji, 3,684,749.
Karp, Edward C., to Sanitary Scale Company. Anti-parallax index. 3,684,349, Cl. 350-110.000.
Karpfen, Lee. Method and apparatus for producing a stair protective tread. 3,683,660, Cl. 72-152.000.
Kasai, Kouhei: *See—*
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Kase, Hiroshi: *See—*
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Katsuta, Kihei: *See—*
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Katz, Edward; Ehrenthal, Irving; and Scallet, Barrett L., to Anheuser-Busch, Incorporated. Method of producing sweet syrup by resin isomerization of dextrose syrup. 3,684,574, Cl. 127-46.00a.
Katzer, Ernst: *See—*
Baronnet, Pierre; and Katzer, Ernst, 3,684,106.
Kaufman Aaron M., to Reliable Machine Works, Inc. Shearing apparatus. 3,683,468, Cl. 26-15.00r.
Kaufmann, Hans Peter: *See—*
Baumgartner, Werner Richard; Walker, Erich; Kaufmann, Hans Peter; and Biene, Canton, 3,683,613.
Kaufmann, Harold: *See—*
Achler, Howard S.; and Kaufmann, Harold, 3,683,735.
Kawabe, Tsuneo; and Takeshita, Hiroshi, to Aisin Seiki Company Limited. Load responsive hydraulic pressure control mechanism of an automotive vehicle. 3,684,329, Cl. 303-22.00r.
Kawai, Hisasi: *See—*
Kubo, Seitoku; Mori, Takakazu; Wakamatsu, Hisato; and Kawai, Hisasi, 3,684,066.
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Kawamura, Shuzo, to Murata Kikai Kabushiki Kaisha and Daiwa Boseki Kabushiki Kaisha. Spool holder. 3,684,207, Cl. 242-129.500.
Kawulski, Henry: *See—*
Ball, Donald H.; and Kawulski, Henry, 3,684,396.
Kay, David Blair, to Texas Instruments, Incorporated. High effective absorption coefficient solid state laser rods. 3,684,980, Cl. 331-94.500.
Kazienko, Henry Joseph; and Palmer, Walter Madison, to Johns-Manville Corporation. Pipe joint. 3,684,317, Cl. 285-110.000.
Keaton, Michael John: *See—*
Vermuelen, Theodore; and Keaton, Michael John, 3,684,699.
Keberle, Wolfgang; Striegler, Hellmut; and Weber, Karl-Arnold, to Farbenfabriken Bayer Aktiengesellschaft. Heat sealing textile sheets with polyurethane heat sealing adhesives. 3,684,639, Cl. 161-87.000.
Kegel, Kurt: *See—*
Reichelt, Bernhard; Lippert, Wolfgang; Zollner, Dieter; and Kegel, Kurt, 3,684,745.
Keith, Carl D.; Masologites, George P.; and Mooi, John. Platinum-rhenium reforming on supports of different cracking activity. 3,684,692, Cl. 208-65.000.
Keller, James P.: *See—*

Buntin, Robert R.; Harding, John W.; Keller, James P.; and Murdock, Vollie L., 3,684,415.
Keller, Miner S., II. Cryogenic fuse. 3,684,923, Cl. 317-13.00d.
Keller, Rudolf: *See*—
Bindler, Jakob; and Keller, Rudolf, 3,684,426.
Kelling, Leroy D. C., to General Electric Company. Automatic cutter compensation for contouring control systems. 3,684,874, Cl. 235-151.110.
Kelly, Vernon. Filing device. 3,683,533, Cl. 40-359.000.
Kelly, William J., to Cogar Corporation. Automatic control of position and with of a tracking window in a data recovery system. 3,684,967, Cl. 328-63.000.
Kelsey-Hayes Company: *See*—
Johnson, Howard R., 3,684,062.
Kendall Company, The: *See*—
Mc Whorter, Daniel M., 3,683,930.
Villari, Frank K., 3,683,894.
Kennedy, James D. Socket device for connecting circuit components with a circuit board. 3,685,002, Cl. 339-17.000.
Kent, Roger E., to National Dust Collector Corporation. Gas scrubber having tiltable grids and method of using. 3,683,593, Cl. 65-91.000.
Keppler, John E.; and Harris, Jesse W., to Tampo Manufacturing Company. Ground or road surface compacting machine. 3,683,763, Cl. 94-50.00r.
Kereluk, Karl; and Lloyd, Robert S., to American Sterilizer Company. Microbiological surface sampler. 3,684,660, Cl. 195-139.000.
Kerr Glass Manufacturing Corporation: *See*—
Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., 3,684,469.
Kerr, Wayne L., to Schlumberger Technology Corporation. Underwater pressure break connector. 3,685,004, Cl. 339-61.00m.
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich. Nickel-base metalloceramic strengthening material. 3,684,537, Cl. 106-56.000.
Kheifets, Rafail Efimovich: *See*—
Duckhinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosifovich; Anikanov, Nikolai Ivanovich; and Grachev, Leonip Palovich, 3,683,586.
Kidman, Russell B.: *See*—
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Kiebach, Carl T. Assembly element for press. 3,684,099, Cl. 210-380.000.
Kienel, Gerhard. Method for vacuum evaporation of high melting point non-metallic materials. 3,684,557, Cl. 117-93.300.
Kierstead, Edward J.: *See*—
Myer, James A.; Sharma, Ramesh D.; and Kierstead, Edward J., 3,684,979.
Kiessling, Karl Hans Fritz: *See*—
Delin, Per Staffan; Kiessling, Karl Hans Fritz; Thelin, Karl Hugo; and Lars, Solve, 3,684,658.
Kikuchi, Makoto, to Toyoda Koki Kabushiki Kaisha. Dressing apparatus with cup shaped dressing wheels. 3,683,885, Cl. 125-11.0cd.
Kilbride, James R. Method and apparatus utilizing a rotating electromagnetic field for separating particulate material having different magnetic susceptibilities. 3,684,090, Cl. 209-214.000.
Kimberly-Clark Corporation: *See*—
Iltis, Charles O., 3,684,603.
Olson, Virginia A.; and Townsend, Bruce A., 3,683,912.
Rope, Barry S.; and Huffaker, James E., 3,683,486.
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Kimura, Rikiti: *See*—
Hojo, Toku; Matui, Takao; and Kimura, Rikiti, 3,684,384.
Kimura, Setji. Vehicle foot brake locking mechanism; foot brake locking mechanism release means; and parking brake locking mechanism release means. 3,684,049, Cl. 180-103.000.
Kimura, Taro, to Kabushiki Kaisha Ricoh. Water feeding method for offset printing. 3,683,808, Cl. 101-451.000.
Kindy, Ronald J.: *See*—
Homa, George D.; Kindy, Ronald J.; and Miller, Earl D., 3,684,877.
King, Arthur S. Use of electrostatic charge to repel substances from surfaces during cleaning. 3,684,575, Cl. 134-1.000.
King, Donald M.: *See*—
Pinto, Peter J.; King, Donald M.; and McCarthy, Roy B., 3,684,457.
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., to Monsanto Company. Thermally stable polyesters having improved. 3,684,768, Cl. 260-75.00r.
King, Robert W. Glider launcher for kites. 3,684,219, Cl. 244-155.000.
Kirk, Lloyd L. Animal feeding device. 3,683,859, Cl. 119-51.130.
Kirkeby, Richard D.: *See*—
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Kirkpatrick, George M., to Research Corporation. Area navigation display, particularly for aircraft. 3,685,053, Cl. 343-106.00r.
Kirkpatrick, Melvin Douglas: *See*—
and; and Kirkpatrick, Melvin Douglas, 3,683,582.
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Kirsch Company: *See*—
McClintock, Eugene P., 3,683,830.
Kirsch, Jerry. Block manifold for fluid control systems and method of making the same. 3,683,960, Cl. 137-594.000.
Kirschey, Gerhard. Flexible coupling. 3,683,643, Cl. 64-11.00r.
Kissling, Bruno; and Pummer, Helmut. Optical brightening preparations. 3,684,728, Cl. 252-301.20w.
Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Flash photography changeover device. 3,683,768, Cl. 95-10.00c.
Kito, Masahiro, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake pressure control valve assembly. 3,684,330, Cl. 303-54.000.
Kivenson, Gilbert, to Westinghouse Electric Corporation. Vortex reaction type fluid flow indicator. 3,683,691, Cl. 73-194.00b.
Klein, Erwin. Dental illumination device. 3,683,503, Cl. 32-27.000.
Klemm, Kai: *See*—
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Klesper, Hugo: *See*—
Busse, Oswald; and Klesper, Hugo, 3,684,092.
Klettke, Walter G., to Upjohn Company, The. Apparatus for automatically attaching a sleeve to a cylindrical member. 3,683,483, Cl. 29-208.00b.
Klingelhoefer, William Christian: *See*—
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Klose, Robert E.: *See*—
Glicksman, Martin; Klose, Robert E.; and Kirkeby, Richard D., 3,684,521.
Kloss, Helmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Flying body having extensible fins. 3,684,214, Cl. 244-3.270.
KMS Industries, Inc.: *See*—
Dexter, William R.; Jahnke, William R.; and Kimmen, Edward, 3,684,304.
Knapp, Gordon G.: *See*—
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Knor-Bremse KG: *See*—
Baronnet, Pierre; and Katzer, Ernst, 3,684,106.
Knufelmann, Manfred; and Seidel, Ingo, to Gesellschaf fur Nuklearmesstechnik und Industril-Elektronik M. Knuplemann & Co. mbH. Device for measuring the cross-section of wire and the like. 3,684,888, Cl. 250-83.30d.
Kobayashi, Akira: *See*—
Yagi, Yoshiharu; Kobayashi, Akira; and Hirata, Itsuro, 3,684,789.
Kobe Steel, Ltd.: *See*—
Otani, Yasuhiko; Ikegami, Yoshio; and Fujio, Tadami, 3,684,202.
Kobylak, Anthony M.: *See*—
Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., 3,684,468.
Koch, Rockne E., to General Electric Company. Image gate. 3,684,354, Cl. 350-289.000.
Kocks, Friedrich. Process for casting metal with vertical pouring and horizontal cooling. 3,683,999, Cl. 164-98.000.
Koehler, Howard A., to Sperry Rand Corporation. Division utilizing multiples of the divisor stored in an addressable memory. 3,684,879, Cl. 235-156.000.
Koehler, Paul J.; and Aldo, Bruce D. Method and apparatus for automatically splicing film. 3,684,623, Cl. 156-504.000.
Koelbl, Franz, to Schwarzkopf Development Corporation. Jewelry products. 3,684,463, Cl. 29-182.00b.
Koenig, Edward W., to International Telephone and Telegraph Corporation. Multispectral imaging system. 3,684,824, Cl. 178-5.4st.
Koerbel, Hans; and Anderes, Erwin. Parking divider. 368,424,666, Cl. 256-1.000.
Koerv, Peter: *See*—
Barbacsy, Ludwig-Benno; Koerv, Peter; and Mehnert, Walter E., 3,684,956.
Kogaki, Keiji: *See*—
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Kohler, George O.: *See*—
Bickoff, Emanuel M.; Spencer, Roland R.; and Kohler, George O., 3,684,520.
Kohler, Gisbert, to SKF Kugellagerfabriken Gesellschaft mit beschrankter Haftung. Mounting for spindle bearing housings. 3,684,334, Cl. 308-152.000.
Koike, Kazushige, to Mitsubishi Electric Corporation. Apparatus for electrolytically etching a workpiece. 3,684,682, Cl. 204-224.000.
Koivunen, Erkki A., to General Motors Corporation. Brake anti-lock modulator with bypass valve. 3,684,328, Cl. 303-21.0af.
Kojima, Tamotsu: *See*—
Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, 3,684,514.

Kolster, Edward J.; and Ira, George O., to Hallmark Cards, Incorporated. Method of making a wood encased writing instrument. 3,683,484, Cl. 29-416.000.

Komiyama, Katsuhiko, to Citizens Watch Co., Ltd. Day calendar timepiece with multiple language displays. 3,683,614, Cl. 58-58.000.

Konan Camera Laboratory Company, Ltd.: *See*—
Sakamoto, Isamu, 3,684,865.

Kondur, Nicholas, Jr., to Burroughs Corporation. Decimal to binary encoder for generating decimal point position and round-off information in a calculator. 3,685,041, Cl. 340-347.00p.

Koninklijke Nederlandsche Gist-en Spiritusfabriek, N. V.: *See*—
Van Der Waard, Willem F., 3,684,656.

Konishiroku Photo Industry Co., Ltd.: *See*—
Iwama, Masakuni; Inoue, Isaburo; Fujiwara, Mitsuto; Hanazwa, Teruo; Kojima, Tamotsu; Yamamoto, Toshihiko; and Endo, Takaya, 3,684,514.

Kono, Motomi; and Ohtomi, Hiroshi, to Ashijawa Iron Works Co., Ltd. Method and apparatus for separating particles from particle-laden fluid. 3,684,093, Cl. 210-84.000.

Konoki, Keizo; and Ohsaki, Kozo, to Toyo Engeering Corporation and Mitsu Toatsu Chemicals, Inc. Process for removing carbon dioxide from a crude ammonia synthesis gas in a combined system for producing ammonia and urea. 3,684,442, Cl. 23-198.000.

Korom, Arpad: *See*—
Greuter, Andre; and Korom, Arpad, 3,684,900.

Kosaka, Masahiro, to Matsushita Eelctric Industrial Co., Ltd. Cross-talk elimination system for an instructional tape recorder. 3,683,515, Cl. 35-35.00c.

Kosakowski, Henry R., to Bendix Corporation, The. Pulse train to digital converter. 3,685,043, Cl. 340-347.0dd.

Kosco, William C., to LaSalle Machine Tool, Inc. Alternating current static control system. 3,684,926, Cl. 317-148.50r.

Kostechko, Roza Fedorovna: *See*—
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.

Kosuge, Hiroshi: *See*—
Yamachi, Yukio; Fujii, Hirohiko; Yamato-Machi, Kita; Kosuge, Hiroshi; and Morita, Koichi, 3,684,949.

Kotsakis, Mike D., to Imperial-Eastman Corporation. Vibration resistant coupling. 3,684,322, Cl. 285-343.000.

Kowalik, John J.: *See*—
Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., 3,683,602.

Kozmin, Mikhail Ivanovich: *See*—
Bondarev, Konstantin Timofeevich; Kozmin, Mikhail Ivanovich; Minakov, Anatoly Gavrilovich; Minin, Vladimir Ivanovich; Mitkevich, Grigory Iosifovich; and Strekalov, Anatoly Vasilievich, 3,684,475.

Krafthefer, Kerry M. Electrical terminator assembly and method of making components of the same. 3,685,001, Cl. 339-17.00l.

Krage, Paul W.: *See*—
Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., 3,683,602.

Krattenmacher, Willi: *See*—
Crowe, James A.; and Krattenmacher, Willi, 3,683,977.

Kraus, Thaddaus, to Balzers Patent und Beteligungs Aktiengesellschaft. Apparatus for determining the gas content of samples. 3,683,669, Cl. 73-19.000.

Krautkremer, Franz, to Schottel of America Inc. Lift and swinging device for a steerable propeller. 3,683,841, Cl. 315-44.00r.

Kraychy, Stephen; Marsheck, William J.; and Muir, Robert D., to Searle, G. D., & Co. Selective microbiological degradation of steroidal 17-alkyls. 3,684,657, Cl. 195-51.00g.

Kreitz, Walter, to ITT Industries, Inc. Monolithic integrable crystal oscillator circuit. 3,684,981, Cl. 331-116.00r.

Kretchman, Gerald L., to Whirlpool Corporation. Expandable spiral filter. 3,684,096, Cl. 210-356.000.

Kreuschmer, Rudolf. Inprinter apparatus for use on packaging machines or the like. 3,683,798, Cl. 101-27.000.

Kreuz, John Anthony; and Roper, Don Albert, said Kreuz assor. to Du Pont de Nemours, E. I., and Company. Liminar structures of polyimides. 3,684,646, Cl. 161-165.000.

Krikorian, Albert P., to National Bank Book Company, Inc. Hanger file device. 3,684,340, Cl. 312-183.000.

Kroger, Harry, to Sperry Rand Corporation. High frequency diode energy transducer and method of manufacture. 3,684,901, Cl. 307-299.000.

Kruger, Seigfried, to Schering A.G. Berlin und Bergkamen. Pneumatic digital-to-analog converter with storage. 3,684,166, Cl. 235-200.000.

Krusche, Kurt; and Zimmermann, Hubert, to Allstar Verbrauchsguter GmbH & Co. KG. Brush with clamped handle. 3,683,443, Cl. 15-177.000.

Kruse, Ferderick W., Jr. Fuel reservoir with filling signal. 3,684,127, Cl. 220-86.00r.

Kubo, Seitoku; Mori, Takakazu; Wakamatsu, Hisato; and Kawai, Hisasi, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Automatic shift control system for automatic transmission. 3,684,066, Cl. 192-4.00a.

Kubota, Hiroyuki; Tamada, Akihiro; and Uemura, Motonori, to Nippon Kokan Kabushiki Kaisha. Sea-water corrosion resisting steel containing aluminum for welding structures. 3,684,493, Cl. 75-124.000.

Kuck, Mark Allen: *See*—
Gunther, Adolph Peter; Hebel, Kenneth Gerard; and Kuck, Mark Allen, 3,683,701.

Kudo, Tetsuichi: *See*—
Makishima, Shoji; Hirai, Hidefumi; Tomiie, Kazuo; and Kudo, Tetsuichi, 3,684,578.

Kuehl, Guenther L. Transport device. 3,684,079, Cl. 198-139.000.

Kuehn, Andrew, III, to Systematics, Inc. Current sensing switch. 3,684,988, Cl. 335-204.000.

Kuhfuss, Herbert F.: *See*—
Jackson, Winston J., Jr.; Kuhfuss, Herbert F.; and Caldwell, John R., 3,684,766.

Kuhnis, Hans Herbert; and Renner, Ulrich. 1,4,4-Substituted piperidine derivatives. 3,684,803, Cl. 260-240.00k.

Kuhns, Roger J., to Avant Incorporated. Method of fabricating a laminated ID card bearing coded data to be read by a photoelectric input device of a data processor. 3,684,615, Cl. 156-306.000.

Kukon, John P.; and Putman, William F., to Aereon Corporation. Aircraft. 3,684,217, Cl. 244-36.000.

Kulish, Stanley J., Jr.: *See*—
Boudouris, Angelo; and Kulish, Stanley J., Jr., 3,684,358.

Kumada, Akio, to Hitachi, Ltd. Ferroelectric-electrically operated optical shutter device. 3,684,351, Cl. 350-150.

Kuniansky, Raymond L., to Anaconda Aluminum Company. Door. 3,683,555, Cl. 49-503.000.

Kunkel Roland Keith; and Munro, John Galvin. Multicomponent filamentary material formed from waste material. 3,684,648, Cl. 161-175.000.

Kuntz, David H. Urethral catheter applicator. 3,683,928, Cl. 128-349.00r.

Kupeev, Jury Alexandrovich: *See*—
Evgrafov, Boris Ivanovich; Kupeev, Jury Alexandrovich; and Turok, Galina Iosifovna, 3,684,944.

Kurimsky, Albert, to Rowe International, Inc. Merchandising machine with size-adjustable compartments. 3,684,131, Cl. 221-242.000.

Kuroha, Noboru, to Nippon Kogaku K.K. Coarse and fine adjustment device of the type using three concentric. 3,683,704, Cl. 74-10.520.

Kurtz, Leonard; Bidwell, Robert; Mishkin, Sidney; and Hallstein, Edward, to Deknatel Inc. Underwater drainage apparatus with air flow meters. 3,683,913, Cl. 128-276.000.

Kurumada, Tomoyuki: *See*—
Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; Watanabe, Ichiro; Murayama, Keisuke; and Morimura, Syoji, 3,684,765.

Kurz, William I. Illinois Tool Works Inc. Method and apparatus for checking tool relief angle. 3,683,509, Cl. 33-201.000.

Kusch, Theodor: *See*—
Voigt, Hans; Stoeck, Georg; Gosewinkel, Werner; and Kusch, Theodor, 3,684,573.

Kwako, Stanley J. Holder. 3,684,224, Cl. 248-87.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Abe, Shigeo; and Takayama, Kenichiro, 3,684,653.
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,684,652.
Nakayama, Kiyoshi; Tanaka, Haruo; and Kase, Hiroshi, 3,684,654.
Noguchi, Yuichi; Nakajima, Junichi; Uno, Tetsuo; and Nakanishi, Toru, 3,684,655.

Kyriakos, Vaselios N. Tack strip. 3,683,738, Cl. 85-13.000.

La Barber, Joseph A., to Weiland, Henry. Water massage aerator apparatus. 3,683,899, Cl. 128-66.000.

La Cellophane S.A.: *See*—
Vassitch, Pavle, 3,684,367.

La Framboise, Leo F., to General Motors Corporation. Conductive flexible coupling. 3,684,999, Cl. 339-3.000.

Labombarde, Raymond A. Apparatus and method for applying high viscosity coatings. 3,684,561, Cl. 117-111.004.

Lafferty, Tom. Vehicle washing system. 3,684,184, Cl. 239-311.000.

Lafitte, Rene J. Process and apparatus to calculate and measure the flow of a gaseous fluid. 3,683,692, Cl. 73-204.000.

Lagerstrom, Robert C.; and Berry Willis E., to National Union Electric Corporation. Nozzle height adjusting mechanism for a suction cleaner. 3,683,448, Cl. 15-354.000.

Lagstrom, Goran Emil. Disposable bag for use with incinerator-type dry closets. 3,683,426, Cl. 4-142.000.

Lakewood Manufacturing Co.: *See*—
Peplin, Edward D., 3,683,896.

Lambert, Edward Henry: *See*—
Michael, Tantrimudalige Anthony Don; and Lambert, Edward Henry, 3,683,908.

Land, Edwin H.; and Bellows, Alfred H., to Polaroid Corporation. Folding camera. 3,683,770, Cl. 95-13.000.

Land, Edwin H., to Polaroid Corporation. Self-developing camera. 3,683,771, Cl. 95-13.000.

Land, Edwin H., to Polaroid Corporation. Method and apparatus for editing motion picture film. 3,684,359, Cl. 352-38.000.

Lang, Johann: *See*—
Schulz, Egon; Bolega, Ulrich; and Lang, Johann, 3,684,933.

Lang, Paul Wentworth, 1/2 to Du Pont, Michael H. Optical integrating system. 3,684,346, Cl. 350-96.00b.

Lange, Hertwig: *See*—
Staller, Karel Jan; and Lange, Hertwig, 3,684,075.

Lange, Karl Heinz; and Enniglch, Westphalia, to Bolds Werke Photographische Gerate und Kunstoff R. Photographic camera with electrically operated film metering and timing mechanism. 3,683,774, Cl. 95-31.0fm.

Langecker, Erhard. pparatus for applying labels or plates to blow molded thermoplastic hollow bodies. 3,684,418, Cl. 425-122.000.

Langenhoff, Ferdinand; Termin, Erich; Bleh, Otto; and Lenz, Arnold, to Dynamit Nobel AG. Production of vanadium oxytrichloride. 3,684,433, Cl. 23-19.00v.

Langley, Isaac L., Jr.: *See—*
Tate, John E.; Borenstein, David E.; Langley, Isaac L., Jr.; and Banning, Jack A., 3,684,459.

Langlitz, Karlheinz: *See—*
Mahringer, Karl Heinrich; and Langlitz, Karlheinz, 3,684,265.

Langlois, Gordon E.; Olson, Lloyd J.; and Rudy, Charles E., Jr., to Chevron Research Company. Iron removal. 3,684,700, Cl. 208-251.000.

Lars, Solve: *See—*
Delin, Per Staffan; Kiessling, Karl Hans Fritz; Thelin, Karl Hugo; and Lars, Solve, 3,684,658.

Larsen, Raymond B., to Datel Corporation. Coaxial reel tape transport system. 3,684,208, Cl. 242-188.000.

Larson, Eugene R. Method of making a self-thread forming fastener with easy thread pickup. 3,683,437, Cl. 10-10.000.

Lartigue, Gerard; and Durand, Pierre, to Electronique Marcel Dassault. Specimen tube device. 3,684,453, Cl. 23-253.00r.

LaSalle Machine-Tool, Inc.: *See—*
Kosco, William C., 3,684,926.

Latapy, Jacques. Manufacture of cheeses to be sold by unit. 3,683,500, Cl. 31-46.000.

Lattke, Horst G., to Emhart Corporation. Tray forming apparatus. 3,683,755, Cl. 93-51.100.

Lauck, John D., to Shell Oil Company. Diluent recovery process. 3,684,783, Cl. 260-85.100.

Launay, Jacques; and Mongault, Jacques, to Permo. Valves. 3,683,961, Cl. 137-625.500.

Laurizio, Jeremiah, to American Flange & Mfg. Co., Inc. Container closure having sealing cap and fastening ring. 3,684,125, Cl. 220-27.000.

Lavender, William James, to Sherritt Gordon Mines Limited. Rotary joint. 3,684,316, Cl. 285-16.000.

Lawrence, Geoffrey Lloyd, to Zenith Carburetter Company Limited, The. Carburetters. 3,684,257, Cl. 261-39.00b.

Lawrence, Sheldon E. Means for sharpening the blade of a jointer or planer. 3,683,564, Cl. 51-249.000.

Le Gates, Ralph W.: *See—*
Hyde, Gilbert F.; and Le Gates, Ralph W., 3,684,237.

Lea, Michael C.; and Wray, Ronald J., to Plessey company Limited, The. Manufacture of air bearing assemblies. 3,683,476, Cl. 29-149.500.

Lean, Erich Gung Hwa; Pole, Robert Valdimir; and Tseng, Samuel Chin-Chong, to International Business Machines Corporation. High gain wide band acoustic surface wave transducers using parametric upconversion. 3,684,892, Cl. 302-88.300.

Lear Siegler, Inc.: *See—*
Hedrick, Geoffrey S., 3,685,034.

Learned, Addison W., III: *See—*
Alliegro, Richard A.; and Learned, Addison W., III, 3,683,828.

Lebon & Cie (Cie Centrals d'Eclairage par l'Gas): *See—*
Tabary, Jean, 3,683,628.

Lectromelt Corporation, mesne: *See—*
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Lee Way Frenching, Inc.: *See—*
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Lee, Wing Kai: *See—*
Tesoro, Giuliana; and Lee, Wing Kai, 3,684,429.

Lefrancois, Emile, to Societe Rhodiaceta. Heat sealable elements. 3,684,564, Cl. 117-122.00h.

Lehmann Hein & Co., AG: *See—*
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Lehnen, Robert J.; and Sugalski, Raymond K., to General Electric Company. Rechargeable cell holder. 3,684,583, Cl. 136-173.000.

Lehner, Francis E., to California Institute of Technology. Seismometer. 3,685,011, Cl. 340-17.000.

Leidsche Apparatenfabriek, N.V.: *See—*
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Leifeld, Ferdinand: *See—*
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,683,649.

Leifield, Robert F., to Mallinckrodt Chemical Works. Electrolytic capacitor anode comprising oxide filmed hollow bodies. 3,684,929, Cl. 317-230.000.

Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin, raison Sociale Michelin. Method of making wheels for heavy vehicle. 3,683,479, Cl. 29-159.010.

Lelano, Don H.; and Harris, Billy G., to Overhead Door Corporation. Hinge structure for a closure member. 3,683,453, Cl. 16-129.000.

Leliaert, Raymond M., to Wheelabrator-Frye, Inc. Centrifugal blasting wheel. 3,683,556, Cl. 51-9.000.

Lely Corporation, The: *See—*
Smith, Elwood Lee, 3,683,603.

Lemelson, Jerome H. Continuous manufacturing processes and apparatus. 3,683,471, Cl. 29-33.00c.

Lemelson, Jerome H. Tube welding apparatus. 3,684,150, Cl. 228-3.000.

Lemelson, Jerome H. Process for the manufacture of optical display devices. 3,684,614, Cl. 156-292.000.

Lemmerman, Richard D. Jet engine exhaust augmentation unit. 3,684,054, Cl. 181-33.0hc.

Lengnick, Guenther Fritz: *See—*
Pepe, Anthony Enrico; Lengnick, Guenther Fritz; and Neuroth, Charles George, 3,684,793.

Lenk, Erich, to Barmag Barmer Mahinenfabrik Aktiengesellschaft. Adjustable spinning shaft for melt-spun yarns. 3,684,416, Cl. 425-72.000.

Lenk, James W., to Berkley Machine Company. Running feedback adjustment of envelope making machines. 3,683,757, Cl. 93-61.0ac.

Lenz, Arnold: *See—*
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Lenz, Henry George, to General Electric Company. Castable rotor having radially venting laminations. 3,684,906, Cl. 310-61.000.

Leon, Edward: *See—*
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Leopoldi, Norbert; and Rolin, Kenneth C., Sr. Dial-actuated safety cap. 3,684,117, Cl. 215-9.000.

Lepomaa, Lauri A.; and Roisko, Timo O., to Rikkihoppo Oy. Method of preparing calcium fluoride and soluble phosphate from fluorine containing phosphate rock. 3,684,435, Cl. 23-88.000.

Lesher, Kenneth W., to Stanadyne, Inc. Sintered metal tappet. 3,683,876, Cl. 123-90.510.

Leslie Salt Co.: *See—*
Pinto, Peter J.; King, Donald M.; and McCarthy, Roy B., 3,684,457.

Lessard, Donald E. Ranges finder in a telescopic sight. 3,684,376, Cl. 356-21.000.

Leszczynski, Martin E., to Scandia Packaging Machinery Company. Apparatus for aligning a wrapper sheet in a wrapping machine. 3,683,585, Cl. 53-51.000.

LeTourneau, R. G., Inc.: *See—*
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Best, Peter; and Schweigl, Othmar Friedrich, 3,684,723.
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Hynam, Brian Michael; Wilby, John Leslie; and Young, John Ralph, 3,684,722.
Seguin, Albert Charles Edward, 3,683,582.

Levine, Morris; Brane, Ralph M.; and Hight, Roland W., to PPG Industries, Inc. Electrodeposition of water-based resins with stabilized metal chromate pigments. 3,684,676, Cl. 204-181.000.

Leviton, Leo, to Tronic Products, Inc. Aquarium solutions for support of both fresh water and salt water fish. 3,683,855, Cl. 119-5.000.

Levy, Charles: *See—*
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Levy, Eugene J.: *See—*
Martin, Aaron J.; and Levy, Eugene J., 3,684,454.

Lewis, Gerald Perley; Smyth, Robert William; Booker, Philip P.; and Zeliznak, Richard, to Cominco Ltd. Variegated coatings. 3,684,586, Cl. 148-6.300.

Lewis, Ivor J., to Westinghouse Electric Corporation. Combined hydraulic dump and control valve structure. 3,684,236, Cl. 251-28.000.

Lewis, Karl R. Handgun grip construction. 3,683,535, Cl. 42-71.00p.

Lewis, Raymond H., to Oceanography Mariculture Industries, Inc. Fish egg incubator. 3,683,853, Cl. 119-3.000.

Lewis, Raymond H., to Oceanography Mariculture Industries, Inc. Apparatus for separating viable fish eggs from non-fertilized eggs. 3,683,854, Cl. 119-3.000.

Lewis, Robert B. Moire pattern garment. 3,683,419, Cl. 2-67.000.

Libbey-Owens-Ford Company: *See—*
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Swillinger, Francis L., 3,684,472.

Libby, Charles C.: *See—*
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Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schiekel, Manfred; and Reder, Hurt, 3,684,345.

Lieberthal, Edwin M. Automatic inventory control system with information tape. 3,684,863, Cl. 235-61.70r.

Liebold, Gert: *See—*
Oppenlaender, Knut; Liebold, Gert; Mohr, Rudolf; Buettner, Egon; and Matschat, Karl, 3,684,735.

Liebold, Gert; and Oppenlaender, Knut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Polymers of alkylene oxides as crude oil demulsifiers. 3,684,734, Cl. 252-342.000.

Lifshits, Viktor Senderovich; Grigoriev, Viktor Ivanovich; Petrov, Georgy Nikolaevich; and Papkov, Oleg Sergeevich. Resistance butt welding machine. 3,684,856, Cl. 219-97.000.

Lifton, Ronald W. Decor simulation. 3,683,779, Cl. 95-85.000.

Liggett, James J., to Hoerres, William E. Sweetening compositions. 3,684,529, Cl. 99-141.00a.

Lilljeforss, Gustaf Lennart, to AGA Aktiebolag. Pressure gauge. 3,683,703, Cl. 73-403.000.

Limberger, Walter, to Lumoprint Zindler KG. Copying machine. 3,684,372, Cl. 355-100.000.

Linblad, Thomas N., to Fulton Industries, Inc. Internal temperature responsive meat processing apparatus. 3,684,167, Cl. 236-1.000.

Lind, Heinrich: *See—*
Mahl, Hans; and Lind, Heinrich, 3,684,556.
Linde Aktiengesellschaft: *See—*
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Lingquist, Rolf Artur Ronald: *See—*
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Linkins, Keith: *See—*
McMaster, Robert C.; Libby, Charles C.; and Linkins, Keith, 3,683,470.
Linoli, Gianni; and Mannucci, Enzo Sergio, to Miles Laboratories, Inc. Method for determination of coupling compounds. 3,684,451, Cl. 23-230.00r.
Liouville, Roger. Machine for perforating paper sheets and the like. 3,684,391, Cl. 408-42.000.
Lippert, Wolfgang: *See—*
Reichelt, Bernhard; Lippert, Wolfgang; Zollner, Dieter; and Kegel, Kurt, 3,684,745.
Liston, Carol Ann: *See—*
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Liston, James H.: *See—*
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Liston, Marcia: *See—*
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Livermore Data Systems, Inc.: *See—*
Marguth, Gilbert R., Jr., 3,684,832.
Livingston, William L., to Factory Mutual Research Corporation. Adaptive sprinkler head. 3,684,025, Cl. 169-37.
Livingston, William L. Slurry for ablative water systems comprising a cross-linked polymer gelling agent and a time delay carrier. 3,684,707, Cl. 252-2.000.
Lloyd, Robert S.: *See—*
Kereluk, Karl; and Lloyd, Robert S., 3,684,660.
Locatelli, Loris, to Franchi, Luigi, S.p.A. Heelplate for a rifle. 3,683,538, Cl. 42-74.000.
Lockheed Aircraft Corporation: *See—*
Burton, Raymond V., Jr.; and Giachino, Eugene L., 3,683,675.
Lockley Manufacturing Co., Inc.: *See—*
Vukich, Franklin J., 3,684,233.
Logan, Kenneth C., to Anglo Paper Products Limited. Chip production and plywood veneer manufacture. 3,683,983, Cl. 144-326.00b.
Logan, Kenneth G., to Saflite Corporation. Light bracket for farm vehicles. 3,683,842, Cl. 116-28.000.
Logsdon, Duane D. Pipe holder. 3,684,220, Cl. 248-56.000.
Logsdon, Duane D. Pipe clamp. 3,684,223, Cl. 248-74.000.
Longhi, Anthony M., to United States Steel Corporation. Starter bar for continuous casting with electromagnetically secured mold stool. 3,684,002, Cl. 164-274.000.
Longi, Paolo; Valvassori, Alberto; Greco, Francesco; and Bernasconi, Ermanno, to Montecatini Edison S.p.A. Manufactured shaped articles of unsaturated olefinic copolymers. 3,684,782, Cl. 260-80.780.
Loose, Guenter H., to Eastman Kodak Company. Ultrasonic perforating of a sheet of film, paper or the like. 3,683,736, Cl. 83-16.000.
Lord, Joseph S. Dark current correction circuit for photosensing devices. 3,684,378, Cl. 356-93.
Lotarev, Vladimir Alexeevich: *See—*
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.
Louie, Lawrence D. Tongue scraper. 3,683,924, Cl. 128-4.000.
Louzos, Demetrios V., to Union Carbide Corporation. Nickel fibers useful for galvanic cell electrodes. 3,684,480, Cl. 75-.50r.
Lowery, George M. Method for controlling moisture in flour. 3,684,526, Cl. 99-93.000.
Loy, Alfred; Paitchell, Harold; and Wysocki, Kazmier, said Loy and said Paitchell assors. to Wysocki, Kazmier. Sorter for aerosol valves and other closures having attached tubes or other similar configurations. 3,684,129, Cl. 221-167.000.
Loyzim, Robert J., to Superior Electric Company, The. Stepping motor drive circuit with path for induced voltages. 3,684,934, Cl. 318-138.000.
LTV Electrosystems, Inc.: *See—*
Bayles, Fred R., 3,683,749.
Luboshez, Sergius N. Ferris. Radiochromic combined absorbing reflecting and transmitting structure. 3,684,352, Cl. 350-160.00p.
Lucas, Joseph, (Industries) Limited: *See—*
Johnson, Graham Francis, 3,683,623.
Martin, Anthony Eugene Joseph, 3,683,752.
Lucero, Frank, to Lee Way Frenching, Inc. Apparatus for laying cable and the like. 3,684,030, Cl. 172-700.000.
Lucker, Willi: *See—*
Josten, Friedrich; and Lucker, Willi, 3,684,566.
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Lundstrom, john, to Moisture Register Company. Apparatus for measuring dielectric constant. 3,684,952, Cl. 324-61.0qs.
Lutrario, Raymond G., to Uncas Manufacturing Company. Adjustable finger ring of two unitary pieces. 3,683,642, Cl. 63-15.450.
Lutz, Fritz Norman, to Warner & Swasey Company, The. Power amplifier having source of different power capabilities for energizing a servo motor. 3,684,940, Cl. 318-635.000.
Lysaght, Michael J.; and Hausslein, Robert W. Battery separator materials. 3,684,580, Cl. 136-146.000.
Mac Farland, Charles H., to Scott & Fetzer Company, The. Door operator means. 3,683,710, Cl. 74-89.210.
Mac Kellar, Donald G.: *See—*
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Macemon, Wallace J., to Martin-Marietta Corporation. Silo lug. 3,684,121, Cl. 217-95.000.
MacIntyre, Archibald A. Structure for and method of sorting and orienting. 3,684,077, Cl. 198-33.0aa.
Mackas, Vladimir; and Pomeroy, Walter S. Method for making a locked seal in a bearing. 3,683,475, Cl. 29-148.40s.
Maclagan, Robert Gordon; and Griffiths, Geoffrey William, to Pye Limited. Amplifier mounted on toto of gain control device. 3,684,830, Cl. 179-1.00a.
Maclin, Ernest, to Electro-Nucleonics, Inc. Peristaltic metering and dispensing pump. 3,684,408, Cl. 417-477.000.
Macomber, Robert A.; and Dehne, Clarence A., to Webb, Jervis B., Company. Power and free conveyor system with variable length carriers. 3,683,817, Cl. 104-89.000.
Mader, Helmut: *See—*
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Maes Incorporated: *See—*
Bauspies, Robert O., 3,683,861.
Maes, Robert E., Jr., 3,684,248.
Maes, Robert E., Jr., to Maes Incorporated. Fence gate handle. 3,684,248, Cl. 256-10.000.
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Mager, Adolf: *See—*
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Mahar, John H., to Esso Research and Engineering Company. Split feed to a fluidized iron ore reduction process. 3,684,482, Cl. 136-26.000.
Maher, Robert A. Graphic communication system. 3,684,828, Cl. 178-18.000.
Mahl, Hans; and Lind, Heinrich, to Kalle Aktiengesellschaft. Process for the production of a flexible, synthetic, gas-permeable, multi-layer sheet material having a napped outer surface. 3,684,556, Cl. 117-63.000.
Mahl, Willy; and Werner, Walter, to Bosch, Robert, GmbH. Hydraulic system. 3,683,748, Cl. 91-416.000.
Mahling, Dieter: *See—*
Frielingsdorf, Hans; Mueller-Tamm, Heinz; and Mahling, Dieter, 3,684,610.
Mahogany Forms, Inc., mesne: *See—*
Garnett, Donald W., 3,683,793.
Mahringer, Karl Heinrich; and Langlitz, Karlheinz, to Demag Aktiengesellschaft. Support arrangement for a vessel used in high temperature operations. 3,684,265, Cl. 266-36.00p.
Maison, Richard L., to Rohr Corporation. Variable nozzle for jet engine. 3,684,182, Cl. 239-265.190.
Makishima, Shoji; Hirai, Hidefumi; Tomiie, Kazuo; and Kudo, Tetsuichi. Fuel cell with electrodes having spinel crystal structure. 3,684,578, Cl. 136-86.00f.
Makrite, Inc.: *See—*
Robinson, Arthur H., Jr., 3,683,499.
Malaval, Claude Rene Jean, to Groupement Atomique Alsacienne Atlantique (G.A.A.A.). Rotating shaft seal assembly. 3,684,301, Cl. 277-59.000.
Mallinckrodt Chemical Works: *See—*
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Vacirca, Michael; Smith, Michael; and Tejera, Louis, 3,684,455.
Malz, Ute K., to Whirlpool Corporation. Vacuum cleaner. 3,683,599, Cl. 55-376.000.
Mangels, Theodore F.: *See—*
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Mangold, Robert T., to Nosco Plastics, Incorporated. Pallet. 3,683,821, Cl. 108-53.000.
Manizza, Guelfo A.: *See—*
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Mannaerts, Livinus Eduardus Maria Jozephus: *See—*

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Mannucci, Enzo Sergio: *See—*
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Mansfield, Peter B. Implantable tissue stimulator with a porous anchoring enclosure. 3,683,933, Cl. 128-419.00p.
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Maples, William A., to Imperial-Eastman Corporation. Hose saw. 3,683,557, Cl. 51-37.000.
Marathon Oil Company: *See—*
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Presley, C. Travis; and Argabright, Perry A., 3,684,011.
Webb, Thomas O., 3,684,015.
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Marconi Instruments Limited: *See—*
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Mares, Jindrich: *See—*
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Marguth, Gilbert R., Jr., to Livermore Data Systems, Inc. Acoustical data set/terminal tester. 3,684,832, Cl. 179-2.0dp.
Marichev, Vladimir Petrovich; Slepian, Viktor Iosifovich; Stetsjuk, Nikolai Arsentievich; and Ginzburg, Samuil Borisovich. Dragline boom. 3,684,245, Cl. 254-190.000.
Markel, Richard F., to Superior Graphite Company. Method for high-temperature treatment of petroleum coke. 3,684,446, Cl. 23-209.300.
Marlor, Guy A.: *See—*
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Marmo, Anthony R., to Westinghouse Electric Corporation. Separation process and apparatus. 3,684,703, Cl. 210-13.000.
Marshall, John. Navigational travel time computer. 3,683,506, Cl. 33-76.00r.
Marsheck, William J.: *See—*
Kraychy, Stephen; Marsheck, William J.; and Muir, Robert D., 3,684,657.
Martin, Aaron J.; and Levy, Eugene J. Solids pyrolyzer. 3,684,454, Cl. 23-253.0pc.
Martin, Alan. Threaded blind fastener. 3,683,740, Cl. 85-72.000.
Martin, Anthony Eugene Joseph, to Lucas, Joseph, (Industries) Limited. Multiposition fluid-operable piston and cylinder unit. 3,683,752, Cl. 92-13.510.
Martin, Donald L.: *See—*
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Martin, Donald L., to General Electric Company. Sintered cobalt-rare earth intermetallic product including samarium and cerium and permanent magnets produced therefrom. 3,684,591, Cl. 148-31.570.
Martin, Jerry Roy, to Abbott Laboratories. 3-O(2-L-mycarosyl)-8-hydroxy-erythronolide B. 3,684,794, Cl. 260-210.00e.
Martin-Marietta Corporation: *See—*
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Martindill, Herman Y.; United Specialties, Inc.; and Fire door closing system. $2. 3,683,551, Cl. .
Martinez, Romulo M.: *See—*
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Martinie, Howard M., to SKF Industries, Inc. Prosthetic joint assembly. 3,683,421, Cl. 3-1.000.
Martino, Albert J.: *See—*
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Martyn, Lloyd G., to McCoy Electronics Company. Piezoelectric crystal device including loading elements having the shape of chordal sections. 3,684,905, Cl. 310-8.200.
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Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, 3,684,787.
Marze, Xavier, to Rhone-Roulenc S.A. Quaternary nitrogen-containing random copolymer. 3,684,784, Cl. 260-80.30n.
Marzocchi, Alfred. Method for treating glass fibers. 3,684,470, Cl. 65-3.000.
Maschinenfabrik Winkler, Fallert & Co., AG: *See—*
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Massaro, Robert D. Container opening and closing device. 3,683,433, Cl. 7-14.600.
Massey-Ferguson Inc.: *See—*
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Colombini, Ariano; Viviani, Bruno; Massimino, Antonio; and Sironi, Giuseppe, 3,684,492.
Masuda, Noboru, to Denki Onkyo Co., ltd. Hall effect device having an output voltage of the NTH power characteristics with magnetic induction. 3,684,997, Cl. 538-32.00h.
Matchmaker Industries Inc.: *See—*
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Matejec, Reinhart: *See—*
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Mathewson, Wilfred F., Jr.; and Ryon, David M., to General Electric Company. Blood component exchange device. 3,684,097, Cl. 210-321.000.
Mathys, Pierre. Miniature type ball bearing. 3,684,336, Cl. 308-196.000.
Matschat, Karl: *See—*
Oppenlaender, Knut; Liebold, Gert; Mohr, Rudolf; Buettner, Egon; and Matschat, Karl, 3,684,735.
Matsubara, Hironaga: *See—*
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Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; Watanabe, Ichiro; Murayama, Keisuke; and Morimura, Syoji, to Sankyo Company Limited. Stabilization of synthetic polymers. 3,684,765, Cl. 260-45.80n.
Matsui, Masao: *See—*
Hikida, Ryotaro; Awano, Taikichi; Itoh, Junichiro; Danno, Atsushi; Matsui, Masao; Inaba, Mitigi; and Isogai, Mituyuki, 3,683,659.
Matsui, Masao; and Yamabe, Masahiro, to Kanegafuchi Boseki Kabushiki Kaisha. Novel polyamide multi-segmented unitary fiber. 3,684,647, Cl. 161-175.000.
Matsui, Toshiji; Amano, Yasuhiko; Hotta, Yoshitsugu; and Mitabe, Tsutomu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air conditioner for vehicles. 3,683,784, Cl. 98-2.080.
Matsumoto, Tetsuo. Material eluting method and apparatus. 3,684,705, Cl. 210-31.00c.
Matsuo, Masaharu. Sheet transfer device. 3,684,081, Cl. 198-184.000.
Matsushita Eelctric Industrial Co., Ltd.: *See—*
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Matsushita Electric Works, Ltd.: *See—*
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Matsushita, Masanari, to Nippon Sheet Glass Co., Ltd. Process and apparatus for production of glass ribbon on molten metal bath. 3,684,471, Cl. 65-91.000.
Matthews, Jack R.: *See—*
Temple, Chester S.; and Matthews, Jack R., 3,684,645.
Matthews, Joseph S., to Gulf Research & Development Company. Electrochemical reduction of aromatic compounds. 3,684,669, Cl. 204-73.00r.
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Mauch, Harold A.; and Miller, Robert N., to International computer Products, Inc. Method and apparatus for processing data. 3,685,021, Cl. 340-172.500.
Maucher, Paul, to LuK Lamellan und Kupplungsbau GmbH. Clutch disc. 3,684,070, Cl. 192-106.200.
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Maynard, David Payne; and Weaver, John. Apparatus for making a rigid road which has a textured surface. 3,683,762, Cl. 94-45.00r.
Mazza, Lamberto, to Industie A Zanussi S.p.A. Device for household use, for washing and drying linen, articles of apparel and the like. 3,683,651, Cl. 68-20.
Mazzoni, Renato J.: *See—*
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Mc Cormick, James B., to Pelam Inc. Protective seal for catheter. 3,683,911, Cl. 128-214.00r.
Mc Culloch Corporation: *See—*
Gasner, William L., 3,683,980.
Mc Manus, Ira J. Composite end connection for steel joists. 3,683,580, Cl. 52-334.000.

Mc Whorter, Daniel M., to Kendall Company, The. Surgical drainage tube. 3,683,930, Cl. 128-349.000.

McCabe, John Stanton, to Chicago Bridge & Iron Company. Dynamic boat fendering system. 3,683,631, Cl. 61-46.000.

McCammon, William L.; and Bishop, George E., to Firestone Tire & Rubber Company, The. Propulsion and processing apparatus for flowable materials. 3,684,458, Cl. 23-285.000.

McCarthy, Roy B.: *See—*
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McClain, James E.; Parks, Arcus F.; and Scott, Howard L., to Esco Manufacturing Company. Fault indicating apparatus. 3,685,035, Cl. 340-253.00a.

McClintock, Eugene P., to Kirsch Company. Feed control for sewing operation. 3,683,830, Cl. 112-121.150.

McClure, James H.; and McCrary, James W., to Materials Technology Corporation. Adjustable choke valve. 3,683,965, Cl. 137-625.300.

McConnaughey, Paul W., to Mine Safety Appliances Company. Determination of alcohol. 3,684,456, Cl. 23-254.00r.

McCoy Electronics Company: *See—*
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McCrary, James W.: *See—*
McClure, James H.; and McCrary, James W., 3,683,965.

McCrink, Edward J. Smog reducer. 3,683,625, Cl. 60-276.000.

McDaniels, Shirley M.: *See—*
McDaniels, Thomas, 3,684,846.

McDaniels, Thomas; deceased (by McDaniels, Shirley M.; administratrix). Alarm detector switch assembly. 3,684,846, Cl. 200-61.930.

McDonald, Benjamin J.; and McDonald, Dorothy H. Roller ski apparatus. 3,684,305, Cl. 280-11.190.

McDonald, Dorothy H.: *See—*
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McDonnell, Gerald F.; and Freebairn, Hugh T., to Banana Conrol, Inc. Apparatus for ripening fruit and the like. 3,683,788, Cl. 99-239.000.

McFarland, James W., to Pfizer, Chas., & Co., Inc. Anthelmintic agents. 3,684,802, Cl. 260-240.00e.

McGinley, Emanuel J.; and Zuban, Joseph M. Heat sterilized, stable aqueous dairy drink. 3,684,523, Cl. 99-63.000.

McIntosh, Harold A.; and Slocum, Gordon K., to Robertshaw-Controls Company. Mixing valve construction system and method. 3,684,168, Cl. 236-12.00a.

McKay, Nicholas D. Cartridge comb. 3,683,942, Cl. 132-112.000.

McKenna, Walter J. Absorbent crotch pad. 3,683,910, Cl. 128-159.000.

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McMaster, Robert C.; Libby, Charles C.; and Linkins, Keith. Sonic apparatus for drilling and stub setting. 3,683,470, Cl. 29-33.00k.

McMeekin, James H., to Brockway Glass Company, Inc. Container wall thickness detection. 3,684,089, Cl. 209-82.000.

McMillan, Clyde H., to Fire Task Force Innovations, Inc. Constant pressure, variable flow nozzle. 3,684,192, Cl. 239-452.000.

McVoy, David S., to Coaxial Scientific Corporation. Television communications system. 3,684,823, Cl. 178-5.100.

Meade, Robert M., to Cogar Corporation. Compound and mutlilevel memories. 3,685,020, Cl. 340-172.500.

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Meir, Franz; Pollinger, Hans; and Schmucker, Bernhard. Car stabilizing control system. 3,683,818, Cl. 105-164.000.

Meisert, Ernst; Awater, Albert; Muhlhausen, Cornelius; and Dobereiner, Uwe, to Farbenfabriken Bayer Aktiengesellschaft. Segmented polyurethane elastomers based on polyether and polyester diols. 3,684,770, Cl. 260-75.0np.

Memmel, Feddinand: *See—*
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Memorex Corporation: *See—*
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Mendez, Robert w., to Garwood-Mendez Inc. Food container construction. 3,684,157, Cl. 229-16.000.

Mennesson, Andre L., to Societe Industrielle de Brevits et d'Etudes S.I.B.E. Fuel feed devices for internal combustion engines. 3,683,877, Cl. 123-97.00b.

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Meridian Industries, Inc.: *See—*
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Merrill, Edward W., to Estin, Hans H., Cronkhite, Leonard W., Jr., Wolbsch, William W., Trustees of the and River, Charles, Foundation. Exhaust purification. 3,683,626, Cl. 60-279.000.

Merriman, Horace B.; Collier, William A. H.; and Richardson, Barry A., to Wickman Machine Tool Sales Limited. Coining presses. 3,683,667, Cl. 72-446.000.

Merten, Rudolf; and Wolf, Gerhard Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Hydantoins and polyhydantoins containing carboxylic acid functions. 3,684,774, Cl. 260-77.50c.

Mesek, Frederick K.; and Rapkl, Virginia L., to Johnson & Johnson. Disposable diaper. 3,683,916, Cl. 128-287.000.

Meserve, Forrest Clayton, to Bandage Incorporated. Machine for micro siped tread stock. 3,683,728, Cl. 83-12.000.

Messer Griesheim GmbH: *See—*
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Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Metzner, Irving L.; and O'Connell, Daniel C., to Colgate-Palmolive Company. Foldable-portable stove. 3,683,886, Cl. 126-9.00r.

Meyer, Heinz-Hermann: *See—*
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Meyer, Jurgen; and Sautter, Gerhard. Method and apparatus for adaptive programmed control of a turning machine tool. 3,684,873, Cl. 235-151.110.

Meyer, Kurt; Reuter, Gerhard; and Thumm, Wilhelm, to Metallgesellschaft Aktiengesellschaft. Process for treating minerals containing the FEO group. 3,684,485, Cl. 75-23.000.

Meyer, Lewis M.: *See—*
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Meyercord Industries, Inc.: *See—*
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Meyercord, John C., to Meyercord Industries, Inc. Tilt dolly. 3,684,110, Cl. 214-370.000.

Meyerhoff, Alfred; and Blake, Walter E., to Westinghouse Electric Corporation. Apparatus and process for making a pressure electrical contact assembly for an electrical device. 3,683,492, Cl. 29-588.000.

Meziere, Walter G. Wall structure and method of installing same. 3,683,575, Cl. 52-241.000.

Michael, Tantrimudalige Anthony Don; and Lambert, Edward Henry. Apparatus for sealing the esophagus and providing artificial respiration. 3,683,908, Cl. 128-145.700.

Michellone, Gian Carlo; and Palazzetti, Mario, to Fiat Societa per Azioni. Fluid pressure modulating valves. 3,684,238, Cl. 251-129.000.

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Milgram, Alvin A., to Du Pont de Nemours, E. I., and Company. Process of producing conductive gold patterns. 3,684,569, Cl. 117-212.000.

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Miller, Edward J., Jr., to Westinghouse Electric Corporation. Electrical system with energy barrier. 3,684,924, Cl. 317-18.00b.

Miller, Raoy J.; and Trabbic, Gerald W., to Comfort, Inc. Insulation applicator and method. 3,684,188, Cl. 239-422.000.

Miller, Robert N.: *See—*
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Miller, Warren J. Electrophoretic process for coating photographic layers. 3,684,675, Cl. 204-181.000.

Miller, Warren J. Electrophoretic process for coating photographic layers. 3,684,739, Cl. 204-181.000.

Minakov, Anatoly Gavrilovich: *See—*
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Minin, Vladimir Ivanovich: *See—*
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Mininno, Anthony; Slattery, John; and Shulman, Mildred. Transparent or translucent decorative unit having an encased light source and a self contained power arrangement. 3,684,882, Cl. 240-10.000.
Minnesota Mining and Manufacturing Company: *See—*
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Morris, Cecil Edward; and Rowbotham, Anthony St. John. Manufacture of collapsible packaging tubes. 3,684,607, Cl. 156-187.000.
Morris, Lester. Rigid, buoyant, insulating and rapid folding swimming pool covers. 3,683,428, Cl. 4-172.140.
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Muhlbach, Anton; and Fichtner, Rudi, to USM Corporation. Heel support for a shoe lasting machine. 3,683,439, Cl. 12-14.400.

Muhlhausen, Cornelius: *See—*
Meisert, Ernst; Awater, Albert; Muhlhausen, Cornelius; and Dobereiner, Uwe, 3,684,770.

Muir, Douglas William Ballantyne, to Iwine Findley Limited. Displacement transducer with inductive sensing head and means providing seperate displacement and direction signals. 3,684,961, Cl. 324-34.00d.

Muir, Robert D.: *See—*
Kraychy, Stephen; Marsheck, William J.; and Muir, Robert D., 3,684,657.

Muler, Meinhard: *See—*
Engler, Otto; Hammer, Theodror; and Muler, Meinhard, 3,684,619.

Muller, Armand A. Umbrella construction. 3,683,947, Cl. 135-20.00b.

Muller, Fritz; Stendenbach, Karl-Heinz; and Weizenkorn, Horst-Heinrich. Process and apparatus for use in the work-up of waste water containing phosphorus sludge. 3,684,461, Cl. 23-293.00r.

Muller, Henrik. Method for centralizing the functions of single current-double current converter circuits in centrally controlled teleprinter dial switching. 3,684,822, Cl. 178-4.10r.

Muller, Klaus-Dieter: *See—*
Scherep, Otto; Millauer, Hans; and Muller, Klaus-Dieter, 3,684,796.

Mund, Konrad; and Schulte, Rolf-Winfried. Method of producing a tungsten carbide containing electrode for fuel elements. 3,684,579, Cl. 136-120.0fc.

Munro, John Galvin: *See—*
Kunkel Roland Keith; and Munro, John Galvin, 3,684,648.

Murakami, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Headstock balancing construction for machine tools. 3,684,395, Cl. 408-235.

Murata Kikai Kabushiki Kaisha: *See—*
Kawamura, Shuzo, 3,684,207.

Murayama, Keisuke: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; Watanabe, Ichiro; Murayama, Keisuke; and Morimura, Syoji, 3,684,765.

Murdock, Vollie L.: *See—*
Buntin, Robert R.; Harding, John W.; Keller, James P.; and Murdock, Vollie L., 3,684,415.

Murphy, James A., to International Paper Company. Laminated product bonded with colored adhesive. 3,684,641, Cl. 161-129.000.

Murray, Richard de Hart. Supporting garment. 3,683,909, Cl. 128-159.000.

Murray, William Kirby, to Tri-State Oil Tool Industries, Inc. Section milling tool. 3,684,009, Cl. 166-55.800.

Musgrove, John. Internal comb softening means for beehives. 3,683,432, Cl. 6-2.000.

Mutsuhide, Matsuda: *See—*
Takashi, Uchiyama; Tadashi, Ito; and Mutsuhide, Matsuda, 3,683,769.

Myer, James A.; Sharma, Ramesh D.; and Kierstead, Edward J., to Avco Corporation. Transverse dye laser stimulation with pulsed nitrogen laser. 3,684,979, Cl. 331-94.500.

Myers, David D.: *See—*
Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., 3,684,469.

Naff, Fredric L., Jr., to Computer Transmission Corporation. Housing and frame assembly for enclosing and supporting electronic apparatus. 3,684,925, Cl. 317-100.000.

Nagamoto, Mitsuki; and Sato, Yutaka, to Matsushita Electric Works, Ltd. Electromagnetic relay. 3,684,986, Cl. 335-200.000.

Nagata, Junichi: *See—*
Uziie, Akira; and Nagata, Junichi, 3,683,997.

Nagorskaya, Zinaida Sergeevich: *See—*
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.

Nakajima, Junichi: *See—*
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Nakajima, Yasutaka: *See—*
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Nakanishi, Toru: *See—*
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Nakase, Yoshiaki: *See—*
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Iwai, Tadashi; Miura-Gun, Kanagawa-Ken; Hayashi, Koichtro; and Okamura, Seizo, 3,684,767.

Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Method for preparing cytidine diphosphate choline. 3,684,652, Cl. 195-28.00n.

Nakayama, Kiyoshi; Tanaka, Haruo; and Kase, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-threonine. 3,684,654, Cl. 195-29.000.

Namizuka, Toshio: *See—*
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National Bank Book Company, Inc.: *See—*
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National Cash Register Company, The: *See—*
Christie, John B.; Robison, Glenn W.; and Runquist, Raymond C., Jr., 3,684,868.

National Dust Collector Corporation: *See—*
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National Research Development Corporation: *See—*
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National Union Electric Corporation: *See—*
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Schaefer, Harold W.; and Penn, William H., 3,683,444.

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Nauchno-issledovatelsky i experimentalny institut Avromobilnogo elektrooborudovania i avtopriboroo: *See—*
Evgrafov, Boris Ivanovich; Kupeev, Jury Alexandrovich; and Turok, Galina Iosifovna, 3,684,944.

Naylor, Floyd E. Polymerization process using multifunctional polymerization imitators. 3,684,780, Cl. 260-83.700.

Neel,Emmanuel E. A.; Gaucher, Michel; and Clement Claude J. Hydrocracking process for high viscosity index lubricating oils. 3,684,695, Cl. 208-110.000.

Neill, William J. O. Drive for a rectilinear scanner for organ imaging. 3,683,706, Cl. 74-27.000.

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Nelson, Murrell D., to Mobil Oil Corporation. Balanced pressure drilling. 3,684,038, Cl. 175-66.000.

Netherwood, Paul H., to Sprague Electric Company. Multi-layer beam-lead wiring for semiconductor packages. 3,684,818, Cl. 174-52.00s.

Neuroth, Charles George: *See—*
Pepe, Anthony Enrico; Lengnick, Guenther Fritz; and Neuroth, Charles George, 3,684,793.

Neustadt, Herbert M., to Ludwig Industries. Method and apparatus for amplifying vibrations produced from musical instruments. 3,684,814, Cl. 84-1.040.

Newman, Anthony John: *See—*
Spira, John Ralph; and Newman, Anthony John, 3,684,959.

Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Transfer element and process. 3,684,550, Cl. 117-36.400.

Nielsen, Frank H. Rotatable load-bearing pendants. 3,684,078, Cl. 198-33.0ab.

Nikonov, Vladimir Filippovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Riskind, Alexandr Moiseevich; Stepin, Anatoly Loginovich; Shepelyakovsky, Konstantin Zakharovich; and Shklyarov, Isaak Nakhimovich, to Moskovsky dvazhdy ordena Leia i Ordena Trudovogo Krasnogo Znameni Avtomobilny Zavod imeni I.A. Likhacheva. Method of induction heating of heat-treatable metallic workpieces and apparatus for performing same. 3,684,854, Cl. 219-10.690.

Nilsson, Ove K-G, to Aktiebolaget Tudor. Lead storage battery cell electrolyte density measuring device and method. 3,684,950, Cl. 324-29.500.

Nippon Denso Kabushiki Kaisha: *See—*
Kamamazuka, Isezi; and Ohiwa, Katsuhiko, 3,683,869.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
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Nippon Pneumatic Manufacturing Company Limited: *See—*
Terada, Hiromu, 3,684,034.

Nippon Sheet Glass Co., Ltd.: *See—*
Matsushita, Masanari, 3,684,471.

Nippondenso Co., Ltd.: *See—*
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Nippondenso Kabushiki Kaisha: *See—*
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Nishibori, Yoshihiro: *See—*
Tanaka, Jun; and Nishibori, Yoshihiro, 3,684,496.
Nishida, Koji, to Denki Onkyo Co., Ltd. Deflection yoke for television receivers. 3,684,987, Cl. 335-210.000.
Nissan Motor Company, Limited: *See—*
Yamada, Katsuo, 3,683,950.
Nissle, William N.; Slaby, Robert K.; and Bredeson, Dean K., to French Oil Mill Machinery Company, The. Desolventizing apparatus. 3,684,252, Cl. 259-9.000.
Nitanda, Hiroshi: *See—*
Ito, Yoshio; Katayama, Hajime; Yamaguchi, Masaru; and Nitanda, Hiroshi, 3,684,363.
Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic exposure time control for cameras. 3,683,766, Cl. 95-10.0ct.
Noguchi, Yuichi; Nakajima, Junichi; Uno, Tetsuo; and Nakanishi, Toru, to Kyowa Hakko Kogyo Co., Ltd. Process for producing n-acetylgutamine. 3,684,655, Cl. 195-29.000.
Nohe, Heinz; and Suter, Hubert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of cyclohexadiene-dioic acids. 3,684,668, Cl. 204-73.00r.
Noiles, Douglas G., to United States Surgical Corporation. Method and cartridge for ligating organic tubular structures. 3,683,927, Cl. 128-334.000.
Nolden, Siegfried, to Jagenberg-Werke OG Patentabteilung. Apparatus for regulating the thickness of a coating on sheet material. 3,683,851, Cl. 118-126.000.
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Norddeutsche Affinerie: *See—*
Emicke, Klaus; and Goralczyk, Wilhelm, 3,684,489.
Nordeen, Erwin E., to Whirlpool Corporation. Vacuum cleaner. 3,683,449, Cl. 15-410.000.
North American Rockwell Corporation: *See—*
Deslierres, John M., 3,683,835.
Norton, Charles J.; and Falk, David C., to Marathon Oil Company. Polyacrylamide-polyalkeneoxide mobility control process. 3,684,014, Cl. 166-275.000.
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Nosco Plastics, Incorporated: *See—*
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Noto, Tetsuo: *See—*
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Novikov, Alexei Viktorovich; Fridman, Lev Petrovich; Zinkovsky, Viktor Antonovich; Denisov, Vladimir Ivanovich; Fisenko, Konstantin Vitalievich; Rattenberg, Vadim Nikolaevich; and Presnyakov, Alexandr Alexandrovich. Method for withdrawing copper ingots fro molds during continuous casting. 3,683,998, Cl. 164-82.000.
Nuclear-Chicago Corporation: *See—*
Muehllehner, Gerd, 3,684,886.
Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Adjusting the viscosity of polyalkenamers. 3,684,781, Cl. 260-80.780.
Nutzel, Karl; Haas, Friedrich; and Marwede, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Preparation of polyalkenamers. 3,684,787, Cl. 260-93.100.
N.V. tot Aenneming ovan Werken voorhen H.J.: *See—*
Van Weele, Abraham Francois, 3,683,633.
Nyberg, Sture, to Anstalt Europaische Handelsgellschaft. Apparatus for automatically enciphering and/or deciphering a text consting of multidigit dual coded characters. 3,683,513, Cl. 35-4.000.
Oak Electro/Netics Corporation: *See—*
Ford, Frederick M., 3,684,068.
O'Brien, Michael; Goddard, Wilson B.; and Williams, Rodney B., to University of California, The Regents of the. Sampler for fruits or vegetables in bulk and method of sampling fruits or vegetables in bulk. 3,683,702, Cl. 73-42.00r.
Ocean Science & Engineering, Inc.: *See—*
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Oceanography Mariculture Industries, Inc.: *See—*
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O'Connor, Daniel G., to Singer Company, The, mesne. Two stage sorting system using two-line sorting switches. 3,685,024, Cl. 340-172.500.
Oda, Masao; and Kimima, Noriaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Twin-type slewing crane. 3,684,104, Cl. 212-47.000.
Oetiker, Hans. Detachable two-partite connecting arrangement. 3,683,737, Cl. 85-8.800.
Office Nationale d'Etudes de Recherches Aerospatiales: *See—*
Girard, Andre J., 3,684,379.
Offshore Systems Inc.: *See—*
Payne, Vivian Hershel, 3,683,966.
Ogawa, Tokuo; Sakano, Tatsumi; and Okamura, Shigeyoshi, to Toyota Jidosha Hanbai Kabushiki Kaisha. Disc brake. 3,684,061, Cl. 188-73.500.
Ogura, Kazuhiko: *See—*
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Ohiwa, Katsuhiko: *See—*
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Oishi, Kenzaburo, to Toyoda Koki Kabushiki Kaisha. Grinding machine. 3,683,558, Cl. 51-101.000.
Okamoto, Mitsuo: *See—*
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Okamura, Seizo: *See—*
Ito, Akihiko; Yoshida, Masaru; Nakase, Yoshiaki; Iwai, Tadashi; Miura-Gun, Kanagawa-Ken; Hayashi, Koichtro; and Okamura, Seizo, 3,684,767.
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Okon, Nathaniel N., to Cello Chemical Company, The. Pad holder for floor polishing machine. 3,684,325, Cl. 300-21.000.
Okruzhnov, Nikolai Nikolaevich: *See—*
Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leoiid Borisovich, 3,683,683.
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Olson, Clyde W., to Clyde Machines, Inc. Cargo container trailer transporter. 3,684,108, Cl. 214-84.000.
Olson, Lloyd J.: *See—*
Langlois, Gordon E.; Olson, Lloyd J.; and Rudy, Charles E., Jr., 3,684,700.
Olson, Virginia A.; and Townsend, Bruce A., to Kimberly-Clark Corporation. Absorbent tampon. 3,683,912, Cl. 128-285.000.
Olsson, Olof Bertil: *See—*
Jacobson, Gunnar; and Olsson, Olof Bertil, 3,684,215.
Oltmanns, George F. Insulator and support for electrically charged fence wires. 3,684,247, Cl. 256-10.000.
Olympic General Products Proprietary Limited: *See—*
Grainger, John W., 3,684,606.
O'Neil, Cyril F., Jr., to H-2-O Filter Corporation, The. Substitute for a smoking article such as a cigarette. 3,683,936, Cl. 131-8.000.
Opitz, Herman E.: *See—*
Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., 3,684,469.
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Liebold, Gert; and Oppenlaender, Knut, 3,684,734.
Oppenlaender, Knut; Liebold, Gert; Mohr, Rudolf; Buettner, Egon; and Matschat, Karl. Crude oil demulsifiers. 3,684,735, Cl. 252-342.000.
Optical Coating Laboratory, Inc.: *See—*
Spellman, Vernon C., 3,684,268.
Orban, Robert Arnold, to Parasound, Inc. Four channel stereo synthesizer. 3,684,835, Cl. 179-1.00g.
Ordena Trudovogo Krasnogo Zaneni Zavody AVTOSTEKLO: *See—*
Bondarev, Konstantin Timofeevich; Kozmin, Mikhail Ivanovich; Minakov, Anatoly Gavrilovich; Minin, Vladimir Ivanovich; Mitkevich, Grigory Iosifovich; and Strekalov, Anatoly Vasilievich, 3,684,475.
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Nikonov, Vladimir Filippovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Riskind, Alexandr Moiseevich; Stepin, Anatoly Loginovich; Shepelyakovsky, Konstantin Zakharovich; and Shklyarov, Isaak Nakhimovich, 3,684,854.
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O.S.F. Industries Limited: *See—*
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Oshima, Ryoichiro; Miyamoto, Seigo; Kanemoto, Kazuo; and Ichikawa, Michio, to Hitachi, Ltd. Flow control valve. 3,683,637, Cl. 62-225.000.

Osman, Mohamed A., to Pullman Incorporated. Direct reduction of iron ore and the like. 3,684,486, Cl. 75-34.000.

Ostroski, John W.: *See—*
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Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Electrophoretic light image reproduction device. 3,684,683, Cl. 204-300.000.

Otaguro, Adayaso, to General Corporation, The. Capacitor switching arrangement for regulating power outjust of heating magnetron. 3,684,978, Cl. 331-86.000.

Otani, Yasuhiko; Ikegami, Yoshio; and Fujio, Tadami, to Kobe Steel, Ltd. Continuous take-up apparatus for a linear product. 3,684,202, Cl. 242-25.000.

Otto Engineering, Inc.: *See—*
Roeser, John O., 3,684,250.

Otto, Rigobert: *See—*
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Paitchell, Harold: *See—*
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Palazzetti, Mario: *See—*
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Palazzetti, Mario; and Cavallarin, Bruno. Magnetic ignition distributor. 3,683,880, Cl. 123-146.50a.

Pallmann, Wilhelm. Comminuting particles. 3,684,198, Cl. 241-73.000.

Palmer, Charles G. Article counting sensor apparatus. 3,684,845, Cl. 200-61.410.

Palmer, Walter Madison: *See—*
Kazienko, Henry Joseph; and Palmer, Walter Madison, 3,684,317.

Pammer, Gottfried, to Vockenhuber, Karl and Hauser, Raimund. Information-processing apparatus. 3,684,360, Cl. 352-124.000.

Pangman, William J. Surgically implantable compound breast prosthesis. 3,683,424, Cl. 3-36.000.

Panhard, Jean, to Societe de Constructions Mechaniques. Rotary piston internal combustion engines. 3,683,868, Cl. 123-8.130.

Pantazis, John A. Heatsealing apparatus. 3,684,612, Cl. 156-251.000.

Paper Converting Machine Co., Inc.: *See—*
Craig, Grantland A., 3,684,611.

Papkov, Oleg Sergeevich: *See—*
Lifshits, Viktor Senderovich; Grigoriev, Viktor Ivanovich; Petrov, Georgy Nikolaevich; and Papkov, Oleg Sergeevich, 3,684,856.

Paramedical Specialties: *See—*
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Parasound, Inc.: *See—*
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Park-Ohio Industries, Inc.: *See—*
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Parks, Arcus F.: *See—*
McClain, James E.; Parks, Arcus F.; and Scott, Howard L., 3,685,035.

Parry, Walter E., to International Business Machines Corporation. Keyboard. 3,684,827, Cl. 178-17.00c.

Parsons, Gerard A.: *See—*
Crawford, Richard M.; and Parsons, Gerard A., 3,684,225.

Partagas Catalina. Safety shoelaces. 3,683,520, Cl. 36-50.000.

Pascal, Fredric Davis: *See—*
Gottesman, Martin; and Pascal, Fredric Davis, 3,684,532.

Pascall, George, to Pinatel, John A. Treatment of light-weight, non-woven polyolefin fabrics. 3,684,562, Cl. 117-111.000.

Pase, John D.; and Harrington, Francis E., to United States of America, Atomic Energy Commission. Method of vibratory loading nuclear fuel elements. 3,683,975, Cl. 141-12.000.

Passavant-Werke: *See—*
Busse, Oswald; and Klesper, Hugo, 3,684,092.

Pastoriza, James J., to Analog Devices, Inc. Digital-to-analog converters. 3,685,045, Cl. 340-347.0da.

Patterson, Le Roy, to American International Corporation. Combustion toilet. 3,683,425, Cl. 4-231.000.

Patterson, Thomas. Non-linear quantization reference amplitude lend time crossing intervals. 3,684,829, Cl. 179-1.0sa.

Patton, John T.; and Gillette, Thomas W. Process for producing light products from heavy hydrocarbons. 3,684,689, Cl. 208-54.000.

Patton, Tao L., to Esso Research and Engineering Company. Synthesis of cyanoformamidyl isocyanates and polyiminoimidazolidinediones therefrom. 3,684,773, Cl. 260-77.5ch.

Paull, Peter L.; and Armistead, Fontaine C., to Texaco Development Corporation. Hydraulic lift for amphibious craft. 3,683,629, Cl. 61-8.000.

Payne, Vivian Hershel, to Offshore Systems Inc. Three position valve. 3,683,966, Cl. 137-625.480.

Payraudeau, Henri Andre Charles: *See—*
Payraudeau, Hubert Michel Henri; and Payraudeau, Henri Andre Charles, 3,683,573.

Payraudeau, Hubert Michel Henri; and Payraudeau, Henri Andre Charles, to Technab, Les Brouzils (Vendee). Process for covering buildings, particularly dwellings, and the dwellings obtained by application of this or a similar process. 3,683,573, Cl. 52-235.00.

Peacock, Peter J.: *See—*
Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., 3,683,602.

Pears, Edward Alexander. Press tools and dies. 3,683,722, Cl. 76-107.00r.

Pecchio, Rafael; and Anti-fouling sinker assembly for fishing lines. $2. 3,683,542, Cl. .

Peck, Reese A.: *See—*
Herbstman, Sheldon; and Peck, Reese A., 3,684,685.
Herbstman, Sheldon; and Peck, Reese A., 3,684,686.

Peddinghaus, Carl Ullrich. Load-bearing spring leg. 3,684,269, Cl. 267-64.000.

Pedrani, Giulio, to Fiat Societa per Azioni. Air conditioning device for motor vehicles. 3,683,783, Cl. 98-2.070.

Pedraza, Rafael De Jesus. Laminated pallet and method of making same. 3,684,632, Cl. 161-41.000.

Pegram, John B.: *See—*
Atchley, Raymond D.; Pegram, John B.; and Dixon, Kenneth K., 3,683,849.

Pelam Inc.: *See—*
Mc Cormick, James B., 3,683,911.

Peltola, Waino; and Braski, Ervin W. Timber harvester. 3,683,979, Cl. 143-32.00n.

Pelz, Willibald; Kabitzke, Karlheinz; Freytag, Karl-Heinz; Vetter, Hans; Danhauser, Justus; and Bockly, Erich, to Agfa-Gevaert Aktiengesellschaft. Color photographic silver dye bleach material containing azo dyes with acyl blocked auxochromic groups. 3,68,513, Cl. 96-99.000.

Pembroke, Richard W.: *See—*
Ysbrand, Floyd R.; and Pembroke, Richard W., 3,684,147.

Penn, William H.: *See—*
Schaefer, Harold W.; and Penn, William H., 3,683,444.

Pennace, John R.: *See—*
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Pennel, Gerard J.; Prouvost, Gonzague J.; and Pruvost, Robert P., to Etablissements Pennel & Flipo. Tie for a pneumatic mattress. 3,683,431, Cl. 5-350.000.

Penrod, Robert M.; and Smith, Wallace B. Puzzle toy. 3,684,292, Cl. 273-156.000.

Penso, George N. Automatic scaffolding erecting and dismantling machine. 3,684,056, Cl. 182-19.000.

Pepe, Anthony Enrico; Lengnick, Guenther Fritz; and Neuroth, Charles George, to Stauffer-Wacker Silicone Corporation. Room temperature curing organopolysiloxanes. 3,684,793, Cl. 260-18.00s.

Peplin, Edward D., to Lakewood Manufacturing Co. Vibrating foot drying and treating apparatus. 3,683,896, Cl. 128-24.200.

Perkins, Charles H., to Robertshaw Controls Company. Pneumatic control system and method of operating the same or the like. 3,683,949, Cl. 137-84.000.

Perkins, Garry R.; and Goode, James K., Jr., to Spotnails, Inc. Package for collated elements and a guide attachment therefor. 3,684,339, Cl. 312/073/000.

Perks, Joseph. Opening roof for vehicle. 3,683,993, Cl. 160-37.000.

Permanence Corporation: *See—*
Wendler, Charles F.; and Baum, Charles S., 3,684,497.

Permo: *See—*
Launay, Jacques; and Mongault, Jacques, 3,683,961.

Perry, Dean A., to Allied Industrial Components. Automatic positioning accessory for numerical control machine tools. 3,684,939, Cl. 318-468.000.

Personal Products Company: *See—*
Comerford, John M., 3,683,917.
Ells, Myron B., 3,683,919.

Perugini, Giancarlo; Mercato, Giorgio; Belotti, Luigi; and Caccamo, Carmelo. Plasma-jet generator for versatile applications. 3,684,911, Cl. 313-231.000.

Pete, George H. Mine roof expansion shell assembly. 3,683,741, Cl. 85-88.000.

Peter, Erwin; and Oswald, Peter, to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft. Mounting arrangement for

metal fittings on profile frame members, walls, plates and the like. 3,684,229, Cl. 248-223.000.

Petersen, Harro, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of gamma-aminoalkylureas. 3,684,811, Cl. 260-256.40c.

Peterson, Arnold Ivanovich: *See—*
Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leonid Borisovich, 3,683,683.

Peterson, Carl A. Apparatus and method for injection and dissemination of dry fly ash in mine voids. 3,684,022, Cl. 169-2.00r.

Petrol Injection Limited: *See—*
Jackson, Harold Ernest, 3,683,870.

Petrone, Joseph V. Organic polymer bonded tumbling chip. 3,684,466, Cl. 51-298.000.

Petrov, Georgy Nikolaevich: *See—*
Lifshits, Viktor Senderovich; Grigoriev, Viktor Ivanovich; Petrov, Georgy Nikolaevich; and Papkov, Oleg Sergeevich, 3,684,856.

Pettit, Lewis F., Jr.; and May, homas L., to Westinghouse Electric Corporation. Arc welding current control apparatus. 3,684,942, Cl. 321-5.000.

Pettit, Robert Halsey, to Sperry Rand Corporation. Manipulator and manipulator control system. 3,683,747, Cl. 91-413.000.

Pfaender, Lawrence V.: *See—*
Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., 3,684,468.

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Phillips Fibers Corporation: *See—*
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Phillips Petroleum Company: *See—*
Frazier, Arthur E., 3,684,763.
Hayward, Richard E., Jr., 3,684,601.
Johnston, Harlin D.; and Fury, Roy C., 3,684,447.
Voss, Raymond G., 3,684,140.

Phillips, William, to RCA Corporation. Doped callium fluoride and strentium fluoride photochromic compositions. 3,684,727, Cl. 252-300.000.

Piccolini, Richard J., to Rohm and Haas Company. Compositions containing oil-soluble azo compounds. 3,684,713, Cl. 252-47.500.

Picker X-ray Mfg. Limited: *See—*
Bridgeman, Cecil K., 3,684,276.

Pierce, Ray S. Mudguard attachment for automobiles. 3,684,311, Cl. 280-152.00r.

Pilcher, Frank C., to Hercules Incorporated. Apparatus for manufacture of film. 3,684,421, Cl. 425-327.000.

Pinatel, John A.: *See—*
Pascall, George, 3,684,562.

Pincus, Ralph M., to Bendix Corporation, The. Self-calibrating analog to digital converter with predetermined transfer characteristics. 3,685,048, Cl. 340-347.0ad.

Pinson, Richard D.: *See—*
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Pinto, Peter J.; King, Donald M.; and McCarthy, Roy B., to Leslie Salt Co. Briner. 3,684,457, Cl. 23-271.000.

Piombino, John: *See—*
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Pippin, Reginald F., Jr. Reaction toy arrangement and method. 3,683,544, Cl. 46-74.00b.

Piquerez, Ervin: *See—*
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Piquerez, Ervin, deceased; and Piquerez, Ervin; deceased. Tamper proof watch cases. 3,683,615, Cl. 58-88.00r.

Piron, Jean Gustave. Process for making a dry transfer material. 3,684,544, Cl. 117-3.100.

Pizzella, Raymond R. Disposable bag for medical uses. 3,683,918, Cl. 128-283.000.

Plamagan, Robert I., to Amerace Esna Corporation. Convertible timing device. 3,684,985, Cl. 335-61.000.

Platkus, Walter: *See—*
Rickmeier, Carl H., Jr.; and Platkus, Walter, 3,683,452.

Platzer, Herbert; Singer, Erich; and Wassermann, Franz, to Tiroler Rohren-und Metallwerke Aktiengesellschaft. Pipe joints. 3,684,320, Cl. 285-81.000.

Plessey company Limited, The: *See—*
Lea, Michael C.; and Wray, Ronald J., 3,683,476.

Plomb, Francis: *See—*
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Plumat, Emile: *See—*
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,684,560.

Plumat, Emile; Bohain, Pierre; and Servais, Albert, to Glaverbel S.A. Formation of thin oxide layers. 3,683,848, Cl. 118-49.000.

Podgurski, Harry H., to United States Steel Corporation. Method for maintaining nitriding atmosphere. 3,684,590, Cl. 148-16.600.

Poitras, Edward J., to Fenwal, Inc. Mine explosion suppression method and apparatus. 3,684,021, Cl. 169-2.00r.

Polaroid Corporation: *See—*
Johnson, Bruce K., 3,683,764.
Land, Edwin H.; and Bellows, Alfred H., 3,683,770.
Land, Edwin H., 3,683,771.
Land, Edwin H., 3,684,359.

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Pollinger, Hans: *See—*
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Pollit, Gary L.: *See—*
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Pollitt, Gary L.: *See—*
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Pollitzer, Ernest L., to Universal Oil Products Company. Process for preparing a silica-alumina supported platinum group metal hydrocracking catalyst. 3,684,742, Cl. 252-455.00r.

Polonsky, Samuel; and Boyles, Robert L., to General Electric Company. Illuminated display indicator. 3,683,524, Cl. 40-28.00c.

Polouektoff, Jean Paul, to Snowball Trading Agencies S. A. Anti-roll stabilising installation for ships. 3,683,837, Cl. 114-125.000.

Pomeroy, Walter S.: *See—*
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Popov, Vyacheslav Sergeevich: *See—*
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Popper, Thomas L., to Schering Corporation. Androsteno-2', 5'-dimethyl-5'-alkyl-1'-pyrrolines, methods for their manufacture, and novel 16 alpha- (1'-amino-1-alkylethyl)-pregnene intermediates produced thereby. 3,684,799, Cl. 260-239.500.

Pospisil, Karel: *See—*
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Potts, Vinson S.; and Duham, Frederick W., to Crown Cork & Seal Company, Inc. Container forming apparatus. 3,683,834, Cl. 113-1.00f.

Poultry-Vac, Inc.: *See—*
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Power Parts Company: *See—*
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PPG Industries, Inc.: *See—*
Levine, Morris; Brane, Ralph M.; and Hight, Roland W., 3,684,676.
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Prater, Charles. Camper. 3,684,048, Cl. 180-89.000.

Pray, Lawrence H. Hydraulic disc clutch. 3,684,069, Cl. 192-85.0ca.

Presley, C. Travis; and Argabright, Perry A., to Marathon Oil Company. Mobility control by partial plugging of formations. 3,684,011, Cl. 166-270.000.

Presnyakov, Alexandr Alexandrovich: *See—*
Novikov, Alexei Viktorovich; Fridman, Lev Petrovich; Zinkovsky, Viktor Antonovich; Denisov, Vladimir Ivanovich; Fisenko, Konstantin Vitalievich; Rattenberg, Vadim Nikolaevich; and Presnyakov, Alexandr Alexandrovich, 3,683,998.

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Press, Irving D., to Resistoflex Corporation. Double action fluid valve. 3,683,954, Cl. 137-269.000.

Priefert, Marvin J. Cattle chute. 3,683,864, Cl. 119-99.000.

Priessnetz, Edmund F.; and Scott, Raymond, to Electronic Transmission Systems, Inc. Optical system for facsimile scanners and the like. 3,684,889, Cl. 250-216.000.

Procopio, John J.: *See—*
Goelzer, William C.; Moratelli, Patrick A., Jr.; Griffith, Albert M., III; Myers, David D.; Opitz, Herman E.; and Procopio, John J., 3,684,469.

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Psaar, Hubertus; Puschel, Walter; and Raue, Roderich, to Agfa-Gevaert Aktiengesellschaft. Light sensitive material comprising indolylmethane derivatives and tetrabromomethane. 3,684,510, Cl. 96-48.00r.
Psencik, Erich; Hermsdorf, Horst; and Vltavsky, Horst, to Dynamit Nobel Aktiengesellschaft. Metal coated with varnish film and process for producing same. 3,684,565, Cl. 117-132.0bf.
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Raetzsch, Carl W., to PPG Industries, Inc. Electrolytic cell. 3,684,670, Cl. 204-95.000.
Ragi, Elias George, to Union Carbide Corporation. Composite structure for boiling liquids and its formation. 3,684,007, Cl. 165-133.000.
Rain Jet Corporation: *See—*
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Rainaldi, Nicolino; and Fatutto, Pierlugi. Foam-forming flame-extinguishing compositions containing alkylpolyalkoxysulfates, polyoxylthofene resins and symmetrical debromotetrafluoroethane. 3,684,018, Cl. 169-1.00a.
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Rathmann, William G. Steerable toboggan. 3,684,306, Cl. 280-22.000.
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Reed, Ray, to Holder for license plates and signs. . 3,683,529, Cl. 40-209.000.
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Reichert, Werner. Easy-opening can end. 3,684,126, Cl. 220-54.000.
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Reiland, Bernard F., to Textron Inc. Method for making a drill screw with an extruded point. 3,683,436, Cl. 10-10.000.
Reinhall, Rolf Bertil. Grinding apparatus. 3,684,200, Cl. 241-256.000.
Reinhall, Rolf Bertil. Digestion of fibre pulp from vegetable raw material including pulp level controls. 3,684,651, Cl. 162-19.000.
Reinke, Friedhelm; and Frisch, Karl, to AEG-Elotherm GmbH. Apparatus and a process for inductively heating workpieces. 3,684,851, Cl. 219-10.430.
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Reuter, Gerhard; and Werner, Dietrich, to Metallgesellschaft Aktiengesellschaft. Directly reducing iron oxide in a rotary kiln with pellitized carbonaceous material. 3,684,483, Cl. 75-33.000.

Reyner, Emerson Marshall, III: *See—*
Fritz, William Baird; Sanders, Neil Harrison; Reyner, Emerson Marshall, III; and Fox, Harry Alvin, Jr., 3,683,494.

Reynolds, Eldon J., to Reynolds Research & Manufacturing Corporation. Land smoother. 3,684,031, Cl. 172-686.000.

Reynolds, Frank N., to Poultry-Vac, Inc. Poultry suction loading apparatus and method. 3,683,862, Cl. 119-82.000.

Reynolds Leasing Corporation, mesne: *See—*
Fredrickson, James D.; and Hickman, Ella Sue, 3,683,937.

Reynolds Research & Manufacturing Corporation: *See—*
Reynolds, Eldon J., 3,684,031.

Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft: *See—*
Faber, Peter, 3,684,441.

Rheinstahl Siegener Eisenbahnbedorf GmbH: *See—*
Schneider, Felix, 3,683,553.

Rhone-Poulence S.A.: *See—*
Vilain, Raymond, 3,683,420.

Rhone-Roulenc S.A.: *See—*
Marze, Xavier, 3,684,784.

Rice, Patricia A., to American Crucible Products Company, The. Apparatus to protect a switch chamber against moisture. 3,683,600, Cl. 55-385.000.

Rice, Robert C. Scaffold structure. 3,684,055, Cl. 182-17.000.

Richards, Raymond S.: *See—*
Bode, Wolfgang W.; Dunlap, Glenn H.; Kobylak, Anthony M.; Richards, Raymond S.; and Pfaender, Lawrence V., 3,684,468.

Richardson, Barry A.: *See—*
Merriman, Horace B.; Collier, William A. H.; and Richardson, Barry A., 3,683,667.

Richardson, Darwin W., to Western Company of North America, The. Removal of scale from surfaces. 3,684,720, Cl. 252-86.000.

Richardson-Merrell Inc.: *See—*
Birch, Richard W., 3,684,115.

Rickmeier, Carl H., Jr.; and Platkus, Walter, to Vollrath Co., The. Handle construction for a bowl. 3,683,452, Cl. 16-126.000.

Rieckmann, Robert, to Shaw-Walker Company, The. Drawer depository. 3,683,826, Cl. 109-46.000.

Rigby William H., Jr.: *See—*
Smucker, Clayton A.; Rigby William H., Jr.; and Zellar, Wade V., 3,684,467.

Rigney, James A.: *See—*
Arey, William F.; Hamner, Glen P.; Mason, Ralph B.; and Rigney, James A., 3,684,691.

Rikkihoppo Oy: *See—*
Lepomaa, Lauri A.; and Roisko, Timo O., 3,684,435.

Riley, George A.; and Gartland, Albert J., Jr., to Hubbell, Harvey, Incorporated. Grounding electrical connector. 3,685,007, Cl. 339-189.00r.

Riley, Terence Gerald, to Stanley Works. Cutting knife. 3,683,498, Cl. 30-339.000.

Ringwald, Eugene L.: *See—*
King, Henry L.; Ringwald, Eugene L.; and Randall, James C., 3,684,768.

Rinn Corporation: *See—*
Rinn, Irwin C.; and Stevenson, Charles F., 3,683,782.

Rinn, Irwin C.; and Stevenson, Charles F., to Rinn Corporation. Clip arrangement for dental film processing hangers. 3,683,782, Cl. 95-100.000.

Rirco Alloys AB: *See—*
Fabo, Endre, 3,684,479.

Riskind, Alexandr Moiseevich: *See—*
Nikonov, Vladimir Filippovich; Orlovsky, Anatoly Georgievich; Ostrovsky, Grigory Arkadievich; Riskind, Alexandr Moiseevich; Stepin, Anatoly Loginovich; Shepelyakovsky, Konstantin Zakharovich; and Shklyarov, Isaak Nakhimovich, 3,684,854.

Ritter, George F., Jr., to Libbey-Owens-Ford Company. Bending and tempering glass sheets. 3,684,473, Cl. 65-104.000.

Riv-Skf Officine Di Villar Perosa S.p.A.: *See—*
Fransos, Pieiro; and Camosso, Domenico, 3,684,337.

River, Charles, Foundation: *See—*
Merrill, Edward W., 3,683,626.

Rixson Inc.: *See—*
Morrison, Richard J.; Schlumpf, Arthur A.; and Martino, Albert J., 3,683,450.

Robbins, Vernon L. Line plug with retractable grounding pin. 3,685,000, Cl. 339-14.00r.

Roberts, Joe R.; and Torrence, James L. Disposable pallet. 3,683,822, Cl. 108-56.000.

Roberts, Maurice. Electric storage batteries. 3,684,582, Cl. 136-166.000.

Roberts, Raymond John: *See—*
Wooding, Patrick J.; and Roberts, Raymond John, 3,684,001.

Robertshaw Controls Company: *See—*
Good, Arthur L., 3,683,962.
Perkins, Charles H., 3,683,949.
Tyler, Hugh Jean, 3,684,994.

Robertshaw-Controls Company: *See—*
McIntosh, Harold A.; and Slocum, Gordon K., 3,684,168.

Robertson, Elwood F. Knock-down folding package. 3,683,987, Cl. 150-52.00r.

Robertson, Frederick: *See—*
Bletcher, James H.; and Rauh, Jack K., 3,684,190.

Robertson, Gary: *See—*
Bletcher, James H.; and Rauh, Jack K., 3,684,190.

Robins, Jack; and Harris, Harold B., to Atlas Chemical Industries, Inc. Method of producing dense oxidizer salt-fuel composition. 3,684,597, Cl. 149-46.000.

Robinson, Arthur H., Jr., to Makrite, Inc. Unitary piercing punch device. 3,683,499, Cl. 30-360.000.

Robinson, James G. Aerial display sign. 3,683,530, Cl. 40-215.000.

Robinson, Ralph R. Shielded intrauterine device. 3,683,906, Cl. 128-130.000.

Robison, Glenn W.: *See—*
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Rocket Research Corporation: *See—*
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Roe, Jonas L.: *See—*
Bentley, George L.; and Roe, Jonas L., 3,684,098.

Roeschlaub, Ronald C., to Irontite Products Co., Inc. Roller-type expander tool. 3,683,658, Cl. 72-119.000.

Roeser, John O., to Otto Engineering, Inc. Multi-component mixing apparatus. 3,684,250, Cl. 259-8.000.

Roethlein, Richard J, to Sprague Electric Company. Electrolytic cell with in-situ charging electrolyte. 3,684,928, Cl. 317-230.000.

Rogers, Fulton Floyd, Jr., to Du Pont de Nemours, E. I., and Company. Corrugated packaging film and its preparation. 3,684,642, Cl. 161-135.000.

Rogers, Joe E. Apparatus for preventing escape of fuel vapor from internal combustion engine. 3,683,878, Cl. 123-136.000.

Rogow, Charles Martin. Spool winding method and apparatus. 3,684,205, Cl. 242-67.200.

Rohde, Wilhelm; and Helfgen, Werner, to Dynamit Nobel AG. Process and apparatus for the production of a fuse. 3,683,742, Cl. 86-1.00r.

Rohm and Haas Company: *See—*
Piccolini, Richard J., 3,684,713.

Rohr Corporation: *See—*
Baerresen, Richard B., 3,684,183.
Cook Billy G.; Pollard, Barry; and Martinez, Romulo M., 3,683,488.
Maison, Richard L., 3,684,182.
Raynes, Burt F., 3,685,022.

Roisko, Timo O.: *See—*
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Rolin, Kenneth C., Sr.: *See—*
Leopoldi, Norbert; and Rolin, Kenneth C., Sr., 3,684,117.

Roller, Robert L., to Skogit Corporation. Dunnage clamp for forklift trucks. 3,684,113, Cl. 214-653.000.

Rolls-Royce Limited: *See—*
Morley, Frederick William Walton; Bennett, George Henry; Harvey, Richard George; and Wilson, Alan, 3,684,857.

Romberg, Felix B. Vehicle actuated automatic gate. 3,683,554, Cl. 49-272.000.

Romolo, John B.: *See—*
Shaw, John K.; Romolo, John B.; and Levy, Charles, 3,684,666.

Roof, Ronald L., to Carrier Corporation. Air conditioning apparatus. 3,684,170, Cl. 236-38.000.

Rope, Barry S.; and Huffaker, James E., to Kimberly-Clark Corporation. Method of fabricating a casting mold. 3,683,486, Cl. 29-428.000.

Roper, Don Albert: *See—*
Kreuz, John Anthony; and Roper, Don Albert, 3,684,646.

Rose, Roger A.; and Fox, Thomas U., to Monsanto Company. Handling of raffinates from wet phosphoric acid purification. 3,684,439, Cl. 423-321.000.

Roselius, Ronald R., to Chevron Research Company. Heavy oil conversion. 3,684,688, Cl. 208-50.000.

Rosen, Herbert J.: *See—*
Dyer, James N.; Post, Leo B.; and Rosen, Herbert J., 3,684,724.

Rosner, Leonard A. Girdle type garments. 3,683,935, Cl. 128-547.000.

Ross, Camilla B.: *See—*
Henderson, William E.; and Ross, Camilla B., 3,684,540.

Ross, John M.; and Stryker, Harvey I., to Du Pont de Nemours, E. I., and Company. Process for dyeing paper with disazo dyestuffs and compositions therefor. 3,684,425, Cl. 8-7.000.

Ross, Sidney D.; and Finkelstein, Manuel, to Sprague Electric Company. Electrical capacitors with amide impregnants. 3,684,932, Cl. 317-258.000.

Rossi, Lionello. Articulated pivotable continuous conveyor mounted on a wheeled frame, preferably carrying also a rotating mixer. 3,684,255, Cl. 259-169.000.

Roth, Mikulas M. Pattern grading apparatus. 3,683,504, Cl. 33-17.00a.

Roth, Philip B. Antistatic finish for nylon. 3,684,567, Cl. 117-138.80n.

Rothe, Herbert: *See—*
Dechene, Walter; Rothe, Herbert; and Salmen, Fritz, 3,683,662.

Rothrock, Harry E., Jr.; and Mitchell, Seldon G. Paper board corner packing construction. 3,684,636, Cl. 161-37.000.

Rousseau, Joseph: *See—*
Rousseau, Louis; and Rousseau, Joseph, 3,683,522.

Rousseau, Louis; and Rousseau, Joseph. Frustoconical rotary cutter for digging trenches. 3,683,522, Cl. 37-91.000.

Rowbotham, Anthony St. John: *See—*
Morris, Cecil Edward; and Rowbotham, Anthony St. John, 3,684,607.

Rowe International, Inc.: *See—*
Kurimsky, Albert, 3,684,131.
Rowland, David L. Ash tray. 3,683,938, Cl. 131-240.00r.
Rowland Development Corporation: *See—*
Rowland, William P., 3,684,348.
Rowland, William P., to Rowland Development Corporation. Retroreflective material. 3,684,348, Cl. 350-103.000.
Roy, Salil K., to American Standard Inc. Measurement of pore size and porosity. 3,683,674, Cl. 73-38.000.
Rubina, Vera Petrovna: *See—*
Demidov, Vladimir Vasilievich; Goldshtein, Oleg Semenovich; Peterson, Arnold Ivanovich; Gusev, Leonty Fedorovich; Rubina, Vera Petrovna; Zelik, Alexandr Ivanovich; Tarantser, Boris Ivanovich; Martinson, Yan Eduardovich; Orsky, Eduard Modestovich; Okruzhnov Nikolai Nikolaevich; Purmalis, Laimon Karlovich; Sukonnikov, Felix Semenovch; Shekherev, Dmitry Nikolaevich; Eliseev Dmitry Stepanovich; Vodolagin, Alexei Ivanovich; Zurovsky, Arnold Yanovich; and Drits, Leonid Borisovich, 3,683,683.
Rudolph, Murray. Theft-proof credit card assembly. 3,683,806, Cl. 101-369.000.
Rudy, Charles E., Jr.: *See—*
Langlois, Gordon E.; Olson, Lloyd J.; and Rudy, Charles E., Jr., 3,684,700.
Ruetz, John A.: *See—*
James, Bertram G.; Harman, Ward A.; and Ruetz, John A., 3,684,913.
Ruhland, Felix H.; and Schmidt, Raymond H., to Solar Industries, Inc. Tire bead seater. 3,683,991, Cl. 157-1.100.
Runquist, Raymond C., Jr.: *See—*
Christie, John B.; Robison, Glenn W.; and Runquist, Raymond C., Jr., 3,684,868.
Russell, Raymond Sidney. Water borne amphibious vehicle. 3,683,840, Cl. 115-19.000.
Russell, Robert S.: *See—*
Ashton, William H.; and Russell, Robert S., 3,684,197.
Ryazantsev, Alek Iosifovich: *See—*
Galutva, Gennady Vasilievich; Ryazantsev, Alek Iosifovich; Presnyakov, Gennady Stepanovich; and Modestov, Jury Konstantinovich, 3,684,904.
Ryersen & Haynes, Inc.: *See—*
Andersen-Vie, Axel E., 3,684,243.
Rymes, John E.: *See—*
Berg, Lorne D.; and Rymes, John E., 3,683,816.
Ryon, David M.: *See—*
Mathewson, Wilfred F., Jr.; and Ryon, David M., 3,684,097.
Sabatino, Anthony: *See—*
Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., 3,684,088.
Saflite Corporation: *See—*
Logan, Kenneth G., 3,683,842.
Sager, Karl E., to Kimberly-Clark Corporation. Method and apparatus for making bias reinforced materials. 3,684,604, Cl. 156-171.000.
Saggers, Michael John: *See—*
Shield, Walter; Saggers, Michael John; and Calnan, James, 3,683,897.
Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Electronic shutter system. 3,683,767, Cl. 95-10.0ct.
Sakamoto, Isamu, to Konan Camera Laboratory Company, Ltd. Apparatus for information retrieval. 3,684,865, Cl. 235-61.11e.
Sakano, Tatsumi: *See—*
Ogawa, Tokuo; Sakano, Tatsumi; and Okamura, Shigeyoshi, 3,684,061.
Salmen, Fritz: *See—*
Dechene, Walter; Rothe, Herbert; and Salmen, Fritz, 3,683,662.
Saltus, George E.: *See—*
Bush, Stanley E.; Crouse, Parker E.; and Saltus, George E., 3,684,833.
Samartina, Anthony John, to Tasco Engineering & Supply, Inc. Hose end coupling. 3,684,319, Cl. 285-247.000.
Sammut, Emery J. Timer controlled vehicle heater. 3,683,887, Cl. 126-116.00r.
Samuels, Abe; and Mueller, Rudolph C., to Speed-O-Print Business Machines Corporation. Diverters. 3,684,280, Cl. 271-64.000.
Samuelson, Donald G., to Textron Inc. Integral disk brake apparatus for snowmobiles. 3,684,045, Cl. 180-5.00r.
Samuilov, Ivan Nikolaevich: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.
Sanders, Neil Harrison: *See—*
Fritz, William Baird; Sanders, Neil Harrison; Reyner, Emerson Marshall, III; and Fox, Harry Alvin, Jr., 3,685,494.
Sands, Asa D. Safety valve. 3,683,957, Cl. 137-460.000.
Sanitary Scale Company: *See—*
Karp, Edward C., 3,684,349.
Sanken Electric Co., Ltd.: *See—*
Yamachi, Yukio; Fujii, Hirohiko; Yamato-Machi, Kita; Kosuge, Hiroshi; and Morita, Koichi, 3,684,949.
Sankyo Company Limited: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; Watanabe, Ichiro; Murayama, Keisuke; and Morimura, Syoji, 3,684,765.
Santa Cruz Aggregates Co.: *See—*
Bentley, George L.; and Roe, Jonas L., 3,684,098.
Santosuosso, Robert C. Fishing lure. 3,683,543, Cl. 43-42.090.
Sanz, Manuel Claude; and Weber, Rene, to Micromedic Systems, Inc. Distributor pump. 3,684,409, Cl. 417-519.000.
Sasaki, Toshiharu: *See—*
Yamaguchi, Isao; Sasaki, Toshiharu; and Nakajima, Yasutaka, 3,683,852.
Sato, Kazuo: *See—*
Uchiyamada, Kameo; Sato, Kazuo; and Hisatsune, Tomio, 3,684,309.
Sato, Yutaka: *See—*
Nagamoto, Mitsuki; and Sato, Yutaka, 3,684,986.
Saul, Geoffry Hugh, to Cawood Wharton & Company Limited. Heat treatment of bodies of combustible material. 3,684,259, Cl. 243-8.00r.
Sautter, Gerhard: *See—*
Meyer, Jurgen; and Sautter, Gerhard, 3,684,873.
Sawyer, Elbert M.; and Haas, William M., to General Motors Corporation. Circuit for dissipating the potential induced in each phase winding of a cycloconverter operated motor upon termination of conduction therethrough. 3,684,935, Cl. 318-227.000.
Sayce, Ian George. Production of fluorine or volatile fluorine compounds using plasma jet anode. 3,684,667, Cl. 204-60.000.
Scallet, Barrett L.: *See—*
Katz, Edward; Ehrenthal, Irving; and Scallet, Barrett L., 3,684,574.
Scandia Packaging Machinery Company: *See—*
Leszczynski, Martin E., 3,683,585.
Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., to International Harvester Company. Crop aerating mechanism for harvesters. 3,683,602, Cl. 56-14.400.
Schacher, Willi; and Beck, Heine-Jurgen. Friction clutch or brake system. 3,683,618, Cl. 60-52.00r.
Schaefer, Harold W.; and Penn, William H., to National Union Electric Corporation. Suction cleaner brush roll assembly. 3,683,444, Cl. 15-183.000.
Schaffner, Charles A., to Systometics Incorporated. Network plotting system. 3,684,871, Cl. 235-150.000.
Schagrin, Edward F.: *See—*
Carr, Norman L.; Hamilton, Harry A.; and Schagrin, Edward F., 3,684,687.
Scharfenberg, Walter, to Scharfenbergkupplung G.m.b.H. Buffer coupling. 3,684,105, Cl. 213-14.000.
Scharfenbergkupplung G.m.b.H.: *See—*
Scharfenberg, Walter, 3,684,105.
Schauer, Frank N.: *See—*
Einerson, Amos M.; Schauer, Frank N.; and Abelle, Thomas G., 3,684,400.
Scheffel, John W.; Fischer, Paul W.; and Schmidt, Ethan R., to Union Oil Company of California. Method and composition for treating high-temperature subterranean formations. 3,684,012, Cl. 166-283.000.
Scheirer, David E.; and Klingelhoefer, William Christian, to Allied Chemical Corporation. Solvent extraction processor separating water soluble ionic compounds. 3,684,434, Cl. 423-307.000.
Scheiter, Milton H., to General Motors Corporation. Transmission and clutch control. 3,684,065, Cl. 192-3.520.
Schellhase, Ernst C.: *See—*
Carter, George D.; Covington, Cecil E.; and Schellhase, Ernst C., 3,683,988.
Scherep, Otto; Millauer, Hans; and Muller, Klaus-Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Derivatives of bis-perfluoroalkanoyl-phenylene diamines. 3,684,796, Cl. 260-239.00e.
Schering A.G. Berlin und Bergkamen: *See—*
Kruger, Seigfried, 3,684,166.
Schering Corporation: *See—*
Popper, Thomas L., 3,684,799.
Schidlo, Wolfram: *See—*
Homuth, Horst; Feess, Erich; and Schidlo, Wolfram, 3,684,428.
Schiekel, Manfred; and Reder, Hurt, to Licentia Patent-Verwaltungs-G.m.b.H. Method for making a tube. 3,684,345, Cl. 316-4.000.
Schierding, Royce G.; and Tolbert, Tommy L., to Monsanto Company. Method of fabricating a steel-filament reinforced metal composite. 3,683,485, Cl. 29-419.000.
Schiffli, Nicholas W., to Barber Manufacturing Company. Lint free spindle drive belt. 3,683,712, Cl. 74-231.00s.
Schipper, Richard A., to Tele Cash, Inc. BCD to binary converter. 3,684,878, Cl. 235-155.000.
Schleich, Hans: *See—*
Cayle, Theodore Cayle,; and Schleich, Hans, 3,684,710.
Schlein, Seymour M., to Fanner Manufacturing Company, The. Location marker. 3,683,843, Cl. 116-114.000.
Schlumberger Technology Corporation: *See—*
Allaud, Louis A., 3,683,688.
Graff, Jerry C., 3,684,042.
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Kerr, Wayne L., 3,685,004.
Schlumpf, Arthur A.: *See—*
Morrison, Richard J.; Schlumpf, Arthur A.; and Martino, Albert J., 3,683,450.
Schmersal, Larry J., to Owens-Illinois, Inc. Gas discharge display/memory panels and selection and addressing circuits therefor. 3,684,918, Cl. 315-169.00r.

Schmid, Donald E., to Republic Packaging Corporation. Pallet. 3,683,823, Cl. 108-56.000.

Schmidlin, Fred W., to Xerox Corporation. Lift off electrode. 3,684,364, Cl. 355-3.000.

Schmidt, Ethan R.: *See—*
Scheffel, John W.; Fischer, Paul W.; and Schmidt, Ethan R., 3,684,012.

Schmidt, Raymond H.: *See—*
Ruhland, Felix H.; and Schmidt, Raymond H., 3,683,991.

Schmitz, Rudolf; and Baier, Franz, to Gardisette GmbH, Firma. Weighting band for curtains, drapes or the like as well as for its manufacture. 3,684,608, Cl. 156-203.000.

Schmucker, Bernhard: *See—*
Meir, Franz; Pollinger, Hans; and Schmucker, Bernhard, 3,683,818.

Schneider, Dietmar: *See—*
Doring, Gunter; Kahle, Klaus; and Schneider, Dietmar, 3,684,650.

Schneider, Felix, to Rheinstahl Siegener Eisenbahnbedorf GmbH. Sliding door actuating device. 3,683,553, Cl. 49-235.000.

Schneider, Marvin. Insulating pipe accouterments and the like. 3,684,609, Cl. 156-221.000.

Schneier, Michael L.: *See—*
Anderson, Edgar L.; and Schneier, Michael L., 3,683,944.

Schoij, Edgar, to Union Special Machine Company. Thread control device for sewing machines. 3,683,832, Cl. 112-242.000.

Scholer, Henry Gardner: *See—*
Miner, William Wiley; Scholer, Henry Gardner; and Collins, Stephen Richard, 3,683,796.

Schone, Hans-Hermann: *See—*
Geiger, Rolf; Ptaff, Werner; Eander, Alfred; Schone, Hans-Hermann; and Mager, Adolf, 3,684,791.

Schorr, Murray Arnold; and Dyett, Derek Henry, to Molins Machine Company Limited. Paste delivery apparatus. 3,684,135, Cl. 222-252.000.

Schottel of America Inc.: *See—*
Krautkremer, Franz, 3,683,841.

Schouw, Arthur C. Modular fume scrubber. 3,683,594, Cl. 55-223.000.

Schreder, Felix: *See—*
Fischer, Karl; and Schreder, Felix, 3,684,862.

Schreiber, David D.: *See—*
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Schreiber, L. D., Cheese Co., Inc.: *See—*
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Schulenberg, John W.: *See—*
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Schuler, Claus: *See—*
Hofer, Franz; and Schuler, Claus, 3,684,499.

Schulte, Rolf-Winfried: *See—*
Mund, Konrad; and Schulte, Rolf-Winfried, 3,684,579.

Schulte, Walter; Boie, Immo; Mader, Helmut; and Otto, Rigobert, to Agfa-Gevaert Aktiengesellschaft. Color photographic material. 3,684,515, Cl. 96-100.000.

Schultz, James E.: *See—*
Flournoy, Norman E.; Eisenlohr, Gerald M.; Black, Frank R., Jr.; and Schultz, James E., 3,683,846.

Schultz, Robert S.: *See—*
Duffy, Daniel P., 3,684,116.

Schulz, Egon; Bolega, Ulrich; and Lang, Johann, to International Telephone and Telegraph Corporation. Semiconductor device showing at least three successive zones of alternate opposite conductivity type. 3,684,933, Cl. 317-235.00r.

Schulz, Herbert. Centrifuge comprising a slowly rotating drum in a casing revolving at high speed. 3,684,162, Cl. 233-32.000.

Schupbach, Melvin E. Ice molding apparatus. 3,684,235, Cl. 249-127.000.

Schutrum, Lester F.: *See—*
Stewart, John L.; Mazzoni, Renato J.; and Schutrum, Lester F., 3,683,974.

Schwartzbart, Harry; and Douty, Robert Albert, to Rockwell Manufacturing Company. Butterfly type valve with stress seal. 3,684,239, Cl. 251-173.000.

Schwarz, Frank, to Barnes Engineering Company. High-sensitivity, long-time-constant thermistor bolometer. 3,684,996, Cl. 338-18.000.

Schwarzkopf Development Corporation: *See—*
Koelbl, Franz, 3,684,463.

Schweigl, Othmar Friedrich: *See—*
Best, Peter; and Schweigl, Othmar Friedrich, 3,684,723.

Schweitzer, Earl O.; and Geil, Ronald J., to Clevite Corporation. Device for zig-zag folding an oscillographic record chart. 3,684,275, Cl. 270-79.000.

Science associates, Inc.: *See—*
Hart, Richard T., 3,685,040.

Sciuto, Joseph S., Jr.: *See—*
Hartmann, Leonard; and Sciuto, Joseph S., Jr., 3,684,241.

Scott & Fetzer Company, The: *See—*
Bowman, Joe; and Edwards, James D., 3,683,711.
Mac Farland, Charles H., 3,683,710.

Scott, Howard L.: *See—*
McClain, James E.; Parks, Arcus F.; and Scott, Howard L., 3,685,035.

Scott, Raymond: *See—*
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SDS Data Systems, Inc., mesne: *See—*
Sherer, Paul; and Halverson, Phillip C., 3,685,047.

Seaferro, Inc.: *See—*
Spillman, William B., 3,683,577.

Searle, G. D., & Co.: *See—*
Kraychy, Stephen; Marsheck, William J.; and Muir, Robert D., 3,684,657.

Sefried, Harry H., II, to Sturm, Ruger & Co. Revolver crane. 3,683,536, Cl. 42-62.000.

Seguin, Albert Charles Edward, to Lever Brothers Company. ETHOD FOR LOADING CONTAINERS WITH ARTICLES. 3,683,582, Cl. 53-26.000.

Seidel, Ingo: *See—*
Knufelmann, Manfred; and Seidel, Ingo, 3,684,888.

Seifer, Paul E.; and Bryant, Claudis R. Interstack bridge and shore for cargo containers. 3,683,463, Cl. 24-81.00e.

Seiner, Jerome A. Method of producing pressure sensitive copying sheets. 3,684,551, Cl. 117-36.700.

Seitz, Charles A.; and Bodine, Winston M., to United States of America, Interior. Helium purifier. 3,683,589, Cl. 55-62.000.

Seitz-Werke G.m.b.H.: *See—*
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Self, Kenneth R.: *See—*
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Sensenig, Darryl L.; and Shaub, Robert I., Jr., to Armstrong Cork Company. Cushion floor. 3,684,630, Cl. 161-36.000.

Sergan, Anthony J., to Raymond Engineering, Inc. Mechanical torque wrench and a hydraulic readout therefor. 3,683,686, Cl. 73-139.000.

Serra, Primo, to Olivetti, Ing. C., & C., S.p.A. Device for locking a tool on a spindle of a machine tool. 3,684,303, Cl. 279-82.000.

Servais, Albert: *See—*
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Seyfried, Richard F., to Park-Ohio Industries, Inc. Method and apparatus for adjusting the coupling between an inductor and valve seat. 3,684,852, Cl. 219-10.570.

Shaffer, Roy E., to United States of America, Army. Frangible glass grenade. 3,683,815, Cl. 102-65.000.

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Shank, Joseph L. Pressure sensitive transfer coating. 3,684,549, Cl. 117-36.200.

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Shelton, Ray T.; and Jensen, Ellsworth O., to Weyerhaeuser Company. Resin-impregnated tissue overlays. 3,684,649, Cl. 161-251.000.
Shen, Chung Yu; and Stahlheber, Norman Earl, to Monsanto Company. Granular alkali metal nitrilotricetate and processes or producing same. 3,684,744, Cl. 252-546.000.
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Sherman, Frederick L. Method of making an inflated product with a bend. 3,683,487, Cl. 29-470.900.
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Shigeo, Ono, to Nippon Kogaku K.K. Electronic shutter switch means responsive to the movement of a mirror driving member in a single lens reflex camera. 3,683,776, Cl. 95-42.000.
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Shmidrov, Jury Petrovich; Elektrostal, Moskovskaya Oblast; Mogilevkin, Felix Davydovich; and Rabinovich, Oleg Yakovlevich. Main drive of a mill for cold rolling of tubes. 3,683,664, Cl. 72-249.000.
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Sikes, John. Plate connected structural member construction for building walls. 3,683,576, Cl. 52-250.000.
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Smith, Daniel Ol, to Mobil Oil Corporation. Collapsible sanitary container and container liner. 3,684,155, Cl. 229-148.000.
Smith, Elwood Lee, to Lely Corporation, The. Device for topping tobacco plants. 3,683,603, Cl. 56-63.000.
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Smith, John R.; and Bray, James A. Apparatus for testing the corrosion resistance of tinplate. 3,684,679, Cl. 204-195.00c.
Smith, Lawrence Edward, to RCA Corporation. Transistorized vertical deflection circuit. 3,684,920, Cl. 315-27.0td.
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Song, John S. Tamper-proof overcap for can. 3,684,124, Cl. 220-27.000.
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Suzuki, Jiro, to Dainippon Pharmaceutical Co., Ltd. Tube for connecting blood vessels. 3,683,926, Cl. 128-334.00r.
Svetlichny, Boris Nikolaevich: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.
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Swanquist, Wesley W., to All-Steel Equipment Inc. Device for attaching electrical boxes to metal studding. 3,684,230, Cl. 248-229.000.
Sweeney, William G.: *See—*
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Swillinger, Francis L., to Libbey-Owens-Ford Company. Start up hood in float glass apparatus and method of using same. 3,684,472, Cl. 65-99.00a.
Swimrite, Inc.: *See—*
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Sybron Corporation: *See—*
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Szewalski, Robert. Method of improving the power cycle efficiency of a steam turbine for supercritical steam condions. 3,683,621, Cl. 60-74.000.
Szpitalak, Wesley J., to Continental Can Company, Inc. High speed can printing machine. 3,683,799, Cl. 101-40.000.
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Tabary, Jean, to Lebon & Cie (Cie Centrals d'Eclairage par l'Gas). Storage of fluids. 3,683,628, Cl. 61-.500.
Tadashi, Ito: *See—*
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Takahashi, Frank T.: *See—*
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Takahashi, Isao, to Bunshodo Co., Ltd. Apparatus for the automatic separation of a negative sheet and a photosensitive sheet from the stack of them on a photocopier. 3,684,278, Cl. 271-64.000.
Takashi, Uchiyama; Tadashi, Ito; and Mutsuhide, Matsuda, to Canon Kabushiki Kaisha. Automatic flash circuit. 3,683,769, Cl. 95-11.50r.
Takayama, Kenichiro: *See—*
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Takeichi, Morio; and Ogura, Kazuhiko, to Elmo Company Limited. Cartridge for a motion picture projector. 3,684,211, Cl. 242-199.000.
Takeshita, Hiroshi: *See—*
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Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, to Textilausruestungs-Gesellschaft Schroers & Co. Apparatus to pattern and to dye single colored textiles, expecially carpets, with different colors or tones. 3,683,649, Cl. 68-5.0d.
Tamada, Akihiro: *See—*
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Tanaka, Jun; and Nishibori, Yoshihiro, to Senju Metal Industry Co., Ltd. Solder having improved strength at high temperatures. 3,684,496, Cl. 75-178.0am.
Taniguchi, Hideo, to Toyo Electronics Industry Corporation. Semiconductor device with coplanar electrodes also overlying lateral suraces thereof. 3,684,931, Cl. 317-234.000.
Tanner, Homer C., to Southeastern Aluminum Products, Inc. Unitary guide for sliding panels. 3,683,451, Cl. 16-90.000.
Tanno, Kiyohiko, to Hitachi, Ltd. Xerographic apparatus. 3,684,368, Cl. 355-16.000.
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Tarter, Carl M., to T & W Manufacturing Corporation. Spark plug hole construction and method. 3,683,873, Cl. 123-41.820.
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Samartina, Anthony John, 3,684,319.
Tate, John E.; Borenstein, David E.; Langley, Isaac L., Jr.; and Banning, Jack A., to Phillips Fibers Corporation. Plug metered evaporative reaction tube. 3,684,459, Cl. 23-285.000.
Tatsumi, Masanori: *See—*
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Taylor, Kirman, to Du Pont de Nemours, E. I., and Company. Electroless nickel plating process for nonconductors. 3,684,572, Cl. 117-47.00a.
Taylor, Ruel E., to Taylor, Ruel E., Inc. Method and apparatus for softness testing. 3,683,681, Cl. 73-78.000.
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Tell, Peter Hans. Nozzle for alternative blowing or suction. 3,683,446, Cl. 15-330.000.
Temple, Chester S.; and Matthews, Jack R., to PPG Industries, Inc. Glass fiber reinforced thermoplastic article. 3,684,645, Cl. 161-141.
Terada, Hiromu, to Nippon Pneumatic Manufacturing Company Limited. Impact air driven tool. 3,684,034, Cl. 173-137.000.
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Terreault, Gerard Linel patrick, to General Precision Industries Limited. Frequency synthesizer having output oscillator phase locked to frequencies derived from a single frequency standard. 3,684,976, Cl. 331-22.000.
Tesoro, Giuliana; and Lee, Wing Kai, to Stevens, J. P., & Co., Inc. Process of shrinkproofing wool with epoxy carbamates and a polyamine. 3,684,429, Cl. 8-127.600.
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Timms, Colin Thomas. Fuel injection pumps. 3,683,879, Cl. 123-139.130.
Tinnerman, George A. Method of forming a preformed groove cutting fastener structure. 3,683,438, Cl. 10-86.00f.
Tiroler Rohren-und Metallwerke Aktiengesellschaft: *See—*
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Tobey, Raymond E., to Whirlpool Corporation. Refrigeration system defrosting means. 3,683,636, Cl. 62-276.000.
Togawa, Hideo; and Okamoto, Mitsuo. System for transforming coordinates. 3,684,880, Cl. 235-186.000.
Tokutomi, Seijiro: *See—*
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Tomanec, Ladislav; and Pospisil, Karel, to Ceskoslovenska akademie ved. Tensometric gas and liquid pressure sensing element. 3,683,698, Cl. 73-398.0ar.
Tomiie, Kazuo: *See—*
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Tutui, Mitukuni; and Watanabe, Hiroshi, to Hitachi, Ltd. Battery powered ignition circuit for internal combustion engines. 3,683,881, Cl. 123-148.0dc.
Tyler, Hugh Jean, to Robertshaw Controls Company. Hot wire relay type devices and methods of maintaining or producing such devices. 3,684,994, Cl. 337-140.000.
Uchiyamada, Kameo; Sato, Kazuo; and Hisatsune, Tomio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Inflatable safety device for vehicle passengers. 3,684,309, Cl. 280-150.0ab.
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Unger, Hans Peter Olof; and Westberg, Johan Eric Hayden, to AGA Aktiebolag. Centrifuge. 3,684,161, Cl. 233-26.000.
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Vaessen, Franz, to Hochtief A.G. fur hoch-und Tiefbauten vorm. Gerb. Helfmann. Cylindrical tank for containing high-pressure fluids. 3,683,574, Cl. 52-224.000.
Valfre, Cesare. Negative impedance amplifier. 3,684,975, Cl. 330-207.00p.
Vallicella, Rolando Mario. Combined tree shaker and fruit harvester. 3,683,617, Cl. 56-329.000.
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Van den Heuvel, Walter August; Vanhalst, Johan Eugeen; Brinckman, Eric Maria; and Heugebaert, Frans Clement. Photosensitive massicot Pb(II) in physical development process. 3,684,509, Cl. 96-48.000.
Van Der Lely, Cornelis. Mowing mechanisms. 3,683,601, Cl. 56-6.000.
Van Der Veen, Romke; and Griffioen, Albert, to Combinatic Weslerschelde v.o.f., Utrecht. Method of laying a foundation for a structural element under water. 3,683,632, Cl. 61-50.000.
Van Der Waard, Willem F., to Koninklijke Nederlandsche Gist-en Spiritusfabriek, N. V. Process for the micro-biological preparation of steroids. 3,684,656, Cl. 195-51.00g.
Van Dyk, John W., to Du Pont de Nemours, E. I., and Company. Process for removing surface defects from articles having a thermoelastic surface. 3,684,553, Cl. 117-63.000.
Van Etten, James P., to International Telephone and Telegraph Corporation. Method of improving dynamic performance of a tracking loop for use in a mobile receiver. 3,685,052, Cl. 343-103.000.
Van Heddegem, Luciaan H. E., to International Standard Electric Corporation. Signal sensing arrangement. 3,685,044, Cl. 340-347.0dd.
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Van Weele, Abraham Francois, to N.V. tot Aenneming ovan Werken voorhen H.J. Metal foundation pile. 3,683,633, Cl. 61-53.000.
Van Zijp, Tonny, to Leidsche Apparatenfabriek, N.V. Closing spindle for bottle sealing and opening machines. 3,683,598, Cl. 53-331.500.
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Van den Heuvel, Walter August; Vanhalst, Johan Eugeen; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,684,509.
Vanheertum, Johannes Josephus; Ghys, Theofiel Hubert; and Depoorter, Henri. Methine dye sensitization of a dihydroquinoline photoconductor. 3,684,505, Cl. 96-1.600.
Varian Associates: *See—*
Dahlquist, John A.; Marlor, Guy A.; and Whitehorn, Richard M., 3,684,365.
James, Bertram G.; Harman, Ward A.; and Ruetz, John A., 3,684,913.
Vassitch, Pavle, to La Cellophane S.A. Electrophotographic reproduction apparatus. 3,684,367, Cl. 355-11.000.
Vaughan, Charles L.; and Vesser, William C., to Continental Sensing Inc. Methods of and apparatus for measuring and/or locating temperature conditions. 3,683,696, Cl. 73-344.000.
Veb Kombinat Kali: *See—*
Doring, Gunter; Kahle, Klaus; and Schneider, Dietmar, 3,684,650.
Veedes Industries Inc.: *See—*
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Vendo Company, The: *See—*
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Soraci, Oreste; and Hennessy, John A., 3,684,074.
Ventron Instruments Corporation, Scientific Chemicals Division: *See—*
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Vepa AG: *See—*
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Vercauteren, Marcel. Pulverulent and water bearing explosive and process of producing the same. 3,684,596, Cl. 149-41.000.
Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft: *See—*
Peter, Erwin; and Oswald, Peter, 3,684,229.
Verhoeven, Albert F., to Werner Lehara Inc. Slicing machine. 3,683,985, Cl. 146-62.000.
Vermuelen, Theodore; and Keaton, Michael John, to University of California, The Regents of. Process for recovering oil from tar-oil froths and other heavy oil-water emulsions. 3,684,699, Cl. 208-188.000.
Vernon Tool Co., Ltd.: *See—*
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Flanagan, Michael I., 3,685,039.
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Viegelahn, ARY L., to Michigan Technological University, Board of Control of. Apparatus for measuring angular rotaion. 3,683,685, Cl. 73-136.00a.
Viessmann, Hans. Boiler. 3,683,867, Cl. 122-136.00r.
Vilain, Raymond, to Rhone-Poulence S.A. Hospital glove. 3,683,420, Cl. 2-161.00r.

Viles, Roger Stanley, to Marconi Instruments Limited. Adjustable frequency generator equipments. 3,684,977, Cl. 331-183.000.

Villari, Frank K., to Kendall Company, The. Urine meter and drainage receptacles. 3,683,894, Cl. 128-2.00f.

Vinokurov, Vasily Ivanovich: *See—*
Kestner, Olga Evgenievna; Frolov, Alexei Sergeevich; Vinokurov, Vasily Ivanovich; Trofimov, Mikhail Georgievich; Kostechko, Roza Fedorovna; Pyanov, Valentin Nikiforovich; Golovkin, Jury Ivanovich; Abakumov, Vladimir Borisovich; Shagurin, Anatoly Alexeevich Lotarev, Vladimir Alexeevich; Yakovlev, Anatoly Alexeevich; Popov, Vyacheslav Sergeevich; and Nagorskaya, Zinaida Sergeevich, 3,684,537.

Viviani, Bruno: *See—*
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Voegtlen, Dieter: *See—*
Brandt, Fritz; Ernst, Wolfram; and Voegtlen, Dieter, 3,685,018.

Voight, Bradford R. Screen changer for extruder. 3,684,419, Cl. 425-192.000.

Voigt, Gunter. Holding clips. 3,683,462, Cl. 24-81.0sk.

Voigt, Hans; Stoeck, Georg; Gosewinkel, Werner; and Kusch, Theodor, to Boehringer Mannheim G.m.b.H. Agglomerated anhydrous fructose and process for its production. 3,684,573, Cl. 127-30.000.

Voith, J. M., GmbH., Firma: *See—*
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Vojir, Franks: *See—*
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Vollrath Co., The: *See—*
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Von Haumeder, Walter. Method of refining molten metal. 3,684,488, Cl. 75-52.000.

Von Krusenstierna, Otto, to Allmanna Svenska Elektriska Aktiebolaget. Method of supplying a propulsion device with fuel. 3,683,622, Cl. 60-207.000.

von Starck, Axel, to AEG-Elothm G.m.b.H. Conveyor trough. 3,684,402, Cl. 417-50.000.

Voss, Joseph A.; and Johnson, Carl W., to Kimberly-Clark Corporation. Method for shaping tube ends. 3,683,759, Cl. 93-94.0fc.

Voss, Joseph A., to Kimberly-Clark Corporation. Catamenial devices and methods of making the same. 3,683,915, Cl. 128-285.000.

Voss, Raymond G., to Phillips Petroleum Company. Cutter and cutting method. 3,684,140, Cl. 225-2.000.

Vsesojuzny Nauchno-Issledovatelsky i proektny institut Aljuminievoi magnievoi i elektrodnoi promyshlennos: *See—*
Ivanovichetrov, Vasily; Svetlichny, Boris Nikolaevich; Demidov, Jury Alexeevich; Elin, Nikolai Mikhailovich; Cherepanov, Vladimir Petrovich; Samuilov, Ivan Nikolaevich; and Cheprasov, Ivan Matveevich, 3,684,264.

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Artemenko, Anatoly Ivanovich; Geshtenkern, Rafail Yakovlevich; and Yagupov, Igor Nikolaevich, 3,683,902.

Vukich, Franklin J., to Lockley Manufacturing Co., Inc. Leveling device. 3,684,233, Cl. 248-352.000.

Wada, Shoui, to Mitsubishi Electric Corporation. Automatic return system for tape recorder. 3,684,209, Cl. 242-188.000.

Waddle, James B., to Power Parts Company. Wheel chock. 3,684,060, Cl. 188-36.000.

Wadsted, Bengt, to Marden Anstalt. Process for production of N, M, and C fertilizer. 3,684,476, Cl. 71-28.000.

Wakabayashi, Takashi; and Hozumi, Shiro, to Matsushita Electric Industrial Co., Ltd. Process of switching an electric current. 3,685,026, Cl. 340-173.00r.

Wakabayashi, Takashi; and Hozumi, Shiro, to Matsushita electric Industrial Co., Ltd. Process of memorizing an electric signal. 3,685,028, Cl. 340-173.00r.

Wakamatsu, Hisato: *See—*
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Wakamatsu, Hisato; Kato, Takaaki; Kawakubo, Mamoru; and Ito, Katsunori, to Nippondenso Kabushiki Kaisha. Automatic transmission system with time-delay circuit. 3,683,720, Cl. 74-731.000.

Waldron, Sheldon H. Fixture for hanging drapes. 3,684,232, Cl. 248-300.000.

Walker, Erich: *See—*
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Walker, Jonas: *See—*
Oppenheim, Henry; and Walker, Jonas, 3,683,731.

Wallshein, Melvin. Orthodontic systems. 3,683,502, Cl. 32-14.00a.

Walter, H Paul, to United States of America, Economic Development Administration, mesne. Process for producing a chip-type food product. 3,684,527, Cl. 99-111.000.

Walz, Frank C., Jr.; and Davis, Jerry B., to Armadillo Manufacturing Company. Built-in lift assembly for building. 3,683,571, Cl. 52-125.000.

Walz, Kalus; Baecker, Manfred; and Quaedvlieg, Mathieu, to Farbenfabriken Bayer Aktiengesellschaft. Process for dyeing nitrogen-containing fiber materials with mixtures of 1:2 metal complex azo and acid dyestuffs. 3,684,427, Cl. 8-26.000.

Wambach, Allen: *See—*
Fox, Daniel W.; and Wambach, Allen, 3,683,903.

Wang, Teh Po, to Driver, Wilbur B., Company. Thermocouple extension wire. 3,684,584, Cl. 136-241.000.

Wang, Wen-Chung. Sonic wave coupler and amplifier with determinable delay characteristics. 3,684,970, Cl. 330-5.500.

Wardell, Winnifred A., to Gaston County Dyeing Machine Company. Apparatus for uniformly feeding non-liquid material. 3,684,082, Cl. 198-213.000.

Warner & Swasey Company, The: *See—*
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Wassermann, Franz: *See—*
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Waterman, Neil S.: *See—*
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Watlow Electric Manufacturing Company: *See—*
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Watson, Thomas A. Guadrilateral vehicle. 3,684,044, Cl. 180-5.00r.

Watt, Kenneth E. Fluorescent lampholder. 3,685,003, Cl. 339-56.00r.

Wayne, Alex, to Delavan Manufacturing Company. Spray nozzle. 3,684,194, Cl. 239-493.000.

Wayne, Ronald G., to Centaur Mini Computer Devices Inc. Electrically operated plural reel chance device. 3,684,290, Cl. 273-143.00c.

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Weaver, Paul J., to Automatic Control Systems, Inc. Follower mechanism responsive to abrupt changes in cam slope in cam-controlled machines. 3,683,726, Cl. 82-14.00r.

Webb, Jervis B., Company: *See—*
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Webb, Thomas O., to Marathon Oil Company. Use of micellar solution as an emulsion breaker. 3,684,015, Cl. 166-305.00r.

Weber Dental Manufacturing Company, The: *See—*
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Weber, James W. Table. 3,683,824, Cl. 108-92.000.

Weber, Karl-Arnold: *See—*
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Weber, Karl-Heinz; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Hauptmann, Karl Heinz; deceased (by Hauptmann, Maria; heir), to Boehringer Ingelheim G.m.b.H. 5-Phenyl-7-chloro-1H-1,5-benzodiazepine-2,4- (3H,5H)-diones. 3,684,798, Cl. 260-239.300.

Weber, Rene: *See—*
Sanz, Manuel Claude; and Weber, Rene, 3,684,409.

Webster Spring Co., Inc.: *See—*
Earle, Clarence W., 3,684,270.

Wegner, Henry. Device for facilitating sexual intercourse. 3,683,901, Cl. 128-79.000.

Wehner, Albert, to Lehmann Hein & Co., AG. Tensionable elastic screen bottom. 3,684,091, Cl. 209-403.000.

Weidemann, Rudolf. Connector for fixing hollow bodies to supports. 3,683,461, Cl. 24-73.0hs.

Weigl, John W., to Xerox Corporation. Transparent electrode. 3,684,362, Cl. 355-3.000.

Weiland, Henry: *See—*
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Weiry Westgarth Limited: *See—*
Silver, Robert Simpson, 3,684,662.

Weisglass, Louis I.; and Flieder, Robert A., to Berkey Photo, Inc. Ligh head with interchangeable mixing chambers for high speed enlarger. 3,684,371, Cl. 355-71.000.

Weiss, Hugo, to Compur-Werk Gesellschaft mit beschrankter Haftung. Photographic shutter. 3,683,778, Cl. 95-60.000.

Weiss, Richard W.: *See—*
Thompson, Quentin E.; Reid, Stanley L.; and Weiss, Richard W., 3,684,711.

Weisser, Lee. Flood cell apparatus. 3,683,945, Cl. 134-68.000.

Weizenkorn, Horst-Heinrich: *See—*
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Welch, Stanley B.; and Dills, Raymond L., to General Electric Company. Induction surface heating unit system. 3,684,853, Cl. 219-10.490.

Wells, Willard H., to Tetra Tech, Inc. Holographic imaging system using crossed linear arrays of energy sources and sensors. 3,685,051, Cl. 343-17.000.

Welter, Matthew I. Board game apparatus. 3,684,287, Cl. 273-131.00k.

Wendler, Charles F.; and Baum, Charles S., to Permanence Corporation. Heat resistant high strength composite structure of hard metal particles in a matrix, and methods of making the same. 3,684,497, Cl. 75-203.000.

Wensing, Kenneth L. Two-way choker hook. 3,683,465, Cl. 24-123.00a.

Wenstrom, Richard T.; and Gorton, Thomas S., Jr., to Slade Gorton & Co., Inc. Apparatus for shucking shellfish. 3,683,458, Cl. 17-74.000.

Wentz, John L., to Westinghouse Electric Corporation. Light beam polarization modulator. 3,684,350, Cl. 350-150.000.

Wepfer, George R.; and Winstrom, Bertil G. Process and apparatus for submerged arc welding. 3,684,855, Cl. 219-73.000.

Werkeugmaschinenfabrik Adolf Waldrich Coburg: *See*—
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Werner Lehara Inc.: *See*—
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Werner, Walter: *See*—
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Pettit, Lewis F., Jr.; and May, homas L., 3,684,942.
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Singleton, Jack H., 3,684,401.
Snyder, Carl J., 3,685,023.
Wentz, John L., 3,684,350.
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Westphal, Klaus, to Telefunken Patentyerwerlungesellschaft m.b.H. Method of making an article for use in sound recording and reproducing instruments. 3,683,489, Cl. 29-527.100.

Weststrate, Willem J. J., to General Motors Corporation. Vehicle passive occupant restraining belt arrangement. 3,684,310, Cl. 280-150.0sb.

Weyde, Edith; Ranz, Erwin; and Matejec, Reinhart, to Agfa-Gevaert Aktiengesellschaft. Method of forming vesicular images with peroxidase- active, iodide ions generating compounds. 3,684,511, Cl. 96-48.000.

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Wheelabrator-Frye, Inc.: *See*—
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Wheymann, Charles Terres. Clutch controlled by engine speed and transmission selector. 3,684,071, Cl. 192-3.580.

Whirlpool Corporation: *See*—
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White, Arlton H.; and Chapman, John S. Breathing assist apparatus. 3,683,655, Cl. 128-30.200.

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Whited, Charles A.: *See*—
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Whitehorn, Richard M.: *See*—
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Whitfield, Edwin W.: *See*—
Case, John S.; and Whitfield, Edwin W., 3,685,012.

Wicke, Charles H.; and Gulick, Ronald A., to Research Engineering Company. Switch. 3,684,844, Cl. 200-47.000.

Wicker, Walter, to Staubli Ltd. Apparatus for connecting a loom heald shaft to heald shaft tackle. 3,683,970, Cl. 139-57.000.

Wickman Machine Tool Sales Limited: *See*—
Crane, Brian, 3,683,724.
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Wickman Wimet Limited: *See*—
Joynson, Sidney Edmund, 3,683,473.

Wiese, Joseph A., Jr.; and Tiers, George Van Dyke, to Minnesota Mining and Manufacturing Company. Heat-sensitive sheet material. 3,684,552, Cl. 117-36.800.

Wilby, John Leslie: *See*—
Hynam, Brian Michael; Wilby, John Leslie; and Young, John Ralph, 3,684,722.

Wilfert, Karl; and Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Safety steering for motor vehicles, especially for passenger motor vehicles. 3,683,717, Cl. 74-552.000.

Wilfong, Andrew L. Gas analyzer. 3,683,700, Cl. 73-421.50r.

Wilhelm, Manfred; and Hillenbrand, Bernhard. Super conducting alloy. 3,684,495, Cl. 75-172.000.

Wilkin, Douglas G. Line guide. 3,683,844, Cl. 116-119.000.

Williams, Earl P.: *See*—
Field, Nathan D.; and Williams, Earl P., 3,684,776.
Field, Nathan D.; and Williams, Earl P., 3,684,777.

Williams, Rodney B.: *See*—
O'Brien, Michael; Goddard, Wilson B.; and Williams, Rodney B., 3,683,702.

Williams, Theodore M. Internal combustion engine exhaust burner. 3,683,624, Cl. 60-275.000.

Williamson, Albert C.: *See*—
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Wills, Mac Gordon. Cable cylinders. 3,684,035, Cl. 173-147.000.

Willson, James K. V.: *See*—
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Wilson, Craig L.: *See*—
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Wilson, Paul O., to Baltimore Business Forming Inc. Continuous forms envelope converter system. 3,683,756, Cl. 93-63.00r.

Wilson Pharmaceutical & Chemical Corporation: *See*—
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Wilson, Ronald G. Sealing boot for an electrical receptacle. 3,684,819, Cl. 174-53.000.

Windecker, Leo J. Curable epoxy resin/acrylic resin mixtures. 3,684,617, Cl. 156-330.000.

Windmoller & Holscher: *See*—
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Wingler, Frank: *See*—
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Winkel, Jan Te, to U.S. Philips Corporation. Difference amplifier. 3,684,971, Cl. 330-30.00d.

Winnik, Mitchell: *See*—
Breslow, Ronald; Baldwin, Steven; and Winnik, Mitchell, 3,684,801.

Winslow, Clinton A. Garment hanger dispensing machine. 3,684,130, Cl. 221-212.000.

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Wolbsch, William W., Trustees of the: *See*—
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Wolf, Gerhard Dieter: *See*—
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Wolfe, George H., to Gulf States Paper Corporation. Carton with locking means for reclosable cover. 3,684,159, Cl. 229-48.000.

Wood, Donald E., to Minnesota Mining and Manufacturing Company. Hand tape dispenser with tape positioning means. 3,684,626, Cl. 156-576.000.

Wood, Peter, to Westinghouse Electric Corporation. Gate drive for thyristors at high potentials. 3,684,898, Cl. 307-252.00n.

Wooding, Patrick J.; and Roberts, Raymond John, to Consarc Corporation. Electroslag furnace eliminating magnetic stirring effect. 3,684,001, Cl. 164-250.000.

Woodman Company, The, Inc.: *See*—
Henry, Nelson R., 3,684,254.

Worrall, James D. Thermosetting dry transfer. 3,684,545, Cl. 117-3.400.

Wortham, Joseph S., to Allied Chemical Corporation. Aqueous suspension ruminant feed composition. 3,684,518, Cl. 099/002/00n.

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Wright, Carl L.; and Beacham, Harry H., to FMC Corporation. Method of producing laminates from mixed containing polyphenylene ethers. 3,684,616, Cl. 156-322.000.
Wright, Edmund S., to General Motors Corporation. Production of silica brick. 3,684,538, Cl. 106-63.000.
Wright, John Thomas Matthew; and Calvert, Alan Hilary, to National Research Development Corporation. Apparatus for pumping a fluid. 3,684,405, Cl. 417-394.000.
Wynne, Peter J., to Lectromelt Corporation, mesne. Electric furnace superstructure swing interlock. 3,684,261, Cl. 263-33.00a.
Wysocki, Kazmier: *See—*
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Xerox Corporation: *See—*
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Hayne, Thomas F.; and Whited, Charles A., 3,684,890.
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Yagi, Yoshiharu; Kobayashi, Akira; and Hirata, Itsuro, to Sumitomo Chemical Co., Ltd. Process for production of butadiene polymer. 3,684,789, Cl. 260-94.300.
Yagupov, Igor Nikolaevich: *See—*
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Yamachi, Yukio; Fujii, Hirohiko; Yamato-Machi, Kita; Kosuge, Hiroshi; and Morita, Koichi, to Sanken Electric Co., Ltd. Voltage regulator utilizing thyristor switch means. 3,684,949, Cl. 323-45.000.
Yamada, Katsuo, to Nissan Motor Company, Limited. Composite fluid pressure governor. 3,683,950, Cl. 137-54.000.
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Berg, Quentin: *See*—
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Chilton, George E.: *See*—
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Computer Diode Corp.: *See*—
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Eastman Kodak Co.: *See*—
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CLASSIFICATION OF PATENTS

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514	3,683,641

CLASS 63

15.45	3,683,642

CLASS 64

11R	3,683,643

CLASS 65

3	3,684,467
	3,684,470
4	3,684,468
60	3,684,469
91	3,683,593
	3,684,471
99A	3,684,472
104	3,684,473
105	3,684,474
182R	3,684,475

CLASS 66

8	3,683,644
50A	3,683,645
86	3,683,646

CLASS 68

5D	3,683,648
	3,683,649
	3,683,650
20	3,683,651
23.2	3,683,647

CLASS 70

146	3,683,652

CLASS 71

28	3,684,476
67	3,684,477

CLASS 72

8	3,683,653
30	3,683,654
98	3,683,656
112	3,683,657
119	3,683,658
150	3,683,659
152	3,683,660
208	3,683,661
235	3,683,662
238	3,683,663
249	3,683,664
405	3,683,665
407	3,683,666
446	3,683,667

CLASS 73

1E	3,683,668
19	3,683,669
25	3,683,670
27R	3,683,671
37	3,683,672
	3,683,673
38	3,683,674
40.7	3,683,675
45.1	3,683,676
49.2	3,683,677
53	3,683,678
67.5H	3,683,679
67.7	3,683,680
78	3,683,681
88B	3,683,682
117	3,683,683
136A	3,683,684
	3,683,685
139	3,683,686
146	3,683,687
154	3,683,688
178R	3,683,689
179	3,683,690
194B	3,683,691
204	3,683,692
212	3,683,693
259	3,683,694
295	3,683,695
344	3,683,696
362SC	Re.27,458
382	3,683,697
398AR	3,683,698
403	3,683,703
421R	3,683,699
421.5R	3,683,700
422GC	3,683,701
423R	3,683,702

CLASS 74

10.52	3,683,704
16	3,683,705
27	3,683,706
84	3,683,707
	3,683,708
	3,683,709
89.21	3,683,710
142	3,683,711
231S	3,683,712
243R	3,683,713
414R	3,683,714
471XY	3,683,715
491	3,683,716
552	3,683,717
562.5	3,683,718
661	3,683,719
731	3,683,720
869	3,683,721

CLASS 75

.5BA	3,684,481
.5A	3,684,484
.5B	3,684,479
.5R	3,684,480
3	3,684,478
33	3,684,483
	3,684,485
34	3,684,486
52	3,684,488
75.026	3,684,482
83	3,684,487
101R	3,684,489
	3,684,490
103	3,684,491
109	3,684,492
124	3,684,493
134M	3,684,494
172	3,684,495
178AM	3,684,496
203	3,684,497
208	3,684,498
211	3,684,499

CLASS 76

107R	3,683,722

CLASS 81

3.36	3,683,723

CLASS 82

2.5	3,683,724
4C	3,683,725
14R	3,683,726

CLASS 83

8	3,683,727
12	3,683,728
16	3,683,736
24	3,683,729
27	3,683,730
56	3,683,731
100	3,683,732
199	3,683,733
345	3,683,734
374	3,683,735

CLASS 84

1.04	3,684,814
1.19	3,684,815

CLASS 85

8.8	3,683,737
13	3,683,738
49	3,683,739
72	3,683,740
88	3,683,741

CLASS 86

1R	3,683,742

CLASS 89

33D	3,683,743

CLASS 90

11F	3,683,744

CLASS 91

263	3,683,746
413	3,683,747
416	3,683,748
438	3,683,749
482	3,683,750
486	3,683,751

CLASS 92

13.51	3,683,752
48	3,683,753
165	3,683,754

CLASS 93

51.1	3,683,755
61AC	3,683,757
63R	3,683,756
93DP	3,683,758
94FC	3,683,759

CLASS 94

24	3,683,760
45A	3,683,761
45R	3,683,762
50R	3,683,763

CLASS 95

1.1	3,683,764
10CT	3,683,766
	3,683,767
10C	3,683,765
	3,683,768
11.5R	3,683,769
13	3,683,770
	3,683,771
18P	3,683,772
18	3,683,773
31FM	3,683,774
42	3,683,775
	3,683,776
44C	Re.27,461
44R	3,683,777
60	3,683,778
85	3,683,779
94R	3,683,780
	3,683,781
100	3,683,782

CLASS 96

1R	3,684,500
1.5	3,684,503
	3,684,504
1.6	3,684,502
	3,684,505
	3,684,506
5	3,684,501
27R	3,684,507
29	3,684,508
48R	3,684,510
48	3,684,509
	3,684,511
61M	3,684,512
99	3,684,513
100	3,684,514
	3,684,515

115R 3,684,516
128 3,684,517

CLASS 98

2.07 3,683,783
2.08 3,683,784
35 3,683,785
40V 3,683,787
110 3,683,786

CLASS 99

2N 3,684,518
3 3,684,519
8 3,684,520
17 3,684,521
3,684,522
63 3,684,523
83 3,684,524
92 3,684,525
93 3,684,526
111 3,684,527
134A 3,684,528
141A 3,684,529
168 3,684,530
196 3,684,531
199 3,684,532
239 3,683,788
256 3,683,789
289 3,683,790
340 3,683,791
447 3,683,792
450.1 3,683,793

CLASS 100

45 3,683,794
47 3,684,844
53 3,683,795
145 3,683,796
232 3,683,797

CLASS 101

27 3,683,798
40 3,683,799
93C 3,683,800
99 3,683,801
111 3,683,802
132 3,683,803
133 3,683,804
350 3,683,805
369 3,683,806
426 3,683,807
451 3,683,808

CLASS 102

22 3,683,809
28M 3,683,810
28R 3,683,811
35 3,683,812
37.8 3,683,813
64 3,683,814
65 3,683,815

CLASS 104

6 3,683,816
89 3,683,817

CLASS 105

164 3,683,818
215C 3,683,819
282R 3,683,820

CLASS 106

1 3,684,533
3,684,534
19 3,684,535
53 3,684,536
56 3,684,537
63 3,684,538
117 3,684,539
164 3,684,540
308Q 3,684,541
3,684,542

CLASS 107

67 3,683,456

CLASS 108

33 3,683,825
53 3,683,821
56 3,683,822
92 3,683,824
156 3,683,823

CLASS 109

46 3,683,826
50 3,683,827
83 3,683,828

CLASS 111

73 3,683,829

CLASS 112

121.012 3,683,831
121.15 3,683,830
242 3,683,832
258 3,683,833

CLASS 113

IF 3,683,834

CLASS 114

16.4 3,683,835
67A 3,683,836
125 3,683,837
230 3,683,838
235A 3,683,839

CLASS 115

19 3,683,840
41R 3,683,841

CLASS 116

28 3,683,842
114 3,683,843
119 3,683,844
148 3,683,845

CLASS 117

2R 3,684,543
3.1 3,684,544
3.4 3,684,545
33.5C 3,684,546
34 3,684,547
3,684,548
36.2 3,684,549
36.4 3,684,550
36.7 3,684,551
36.8 3,684,552
47A 3,684,554
3,684,572
47R 3,684,555
63 3,684,553
3,684,556
93.3 3,684,557
100B 3,684,558
102R 3,684,559
105.1 3,684,560
111R 3,684,561
3,684,562
114A 3,684,563
122H 3,684,564
132BF 3,684,565
135.5 3,684,566
138.8N 3,684,567
139.4 3,684,568
212 3,684,569
216 3,684,570
237 3,684,571

CLASS 118

33 3,683,846
48 3,683,847
49 3,683,848
50 3,683,849
100 3,683,850
126 3,683,851
637 3,683,852

CLASS 119

3 3,683,853
3,683,854
5 3,683,855
14.11 3,683,856
17 3,683,857
27 3,683,858
51.13 3,683,859
52 3,683,860
61 3,683,861
82 3,683,862
96 3,683,863
99 3,683,864

CLASS 122

7R 3,683,865
32 3,683,866
136R 3,683,867

CLASS 123

8.13 3,683,868
32EA 3,683,869
3,683,870
3,683,871
34A 3,683,872
41.82 3,683,873
90.12 3,683,874
90.15 3,683,875
90.51 3,683,876
97B 3,683,877
136 3,683,878
139AP 3,683,879
146.5A 3,683,880
148DC 3,683,881

CLASS 124

20B 3,683,882
30R 3,683,883

CLASS 125

11CD 3,683,885
11R 3,683,884

CLASS 126

9R 3,683,886
116A 3,683,887
121 3,683,888
263 3,683,889

CLASS 127

30 3,684,573
46A 3,684,574

CLASS 128

2B 3,683,891
3,683,892
2F 3,683,894
2S 3,683,893
2W 3,683,890
4 3,683,924
20 3,683,895
24.2 3,683,896
25R 3,683,897
3,683,898
30.2 3,683,655
66 3,683,899
75 3,683,900
79 3,683,901
89R 3,683,902
90 3,683,903
127 3,683,904
130 3,683,905
3,683,906
145 3,683,907
145.7 3,683,908
159 3,683,909
3,683,910
214R 3,683,911
276 3,683,913
283 3,683,918
285 3,683,912
3,683,914
3,683,915
287 3,683,916
3,683,917
290W 3,683,919
295 3,683,920
296 3,683,921
300 3,683,922
303.14 3,683,923
304 3,683,924
334C 3,683,925
334R 3,683,926
3,683,927
349R 3,683,928
3,683,930
350V 3,683,929
351 3,683,931
419P 3,683,932
3,683,933
3,683,934
547 3,683,935

CLASS 131

8 3,683,936
140P 3,683,937
240R 3,683,938

CLASS 132

7 3,683,939
39 3,683,940
53 3,683,941
112 3,683,942

CLASS 133

1R 3,683,943

CLASS 134

1 3,684,575
2 3,684,576
3,684,577
57R 3,683,944
68 3,683,945
100 3,683,946

CLASS 135

20B 3,683,947
20 3,683,948

CLASS 136

26 3,684,482
86F 3,684,578
120FC 3,684,579
146 3,684,580
162 3,684,581
166 3,684,582
173 3,684,583
241 3,684,584

CLASS 137

54 3,683,950
81.5 3,683,951
84 3,683,949
100 3,683,952
205.5 3,683,953
269 3,683,954
408 3,683,956
460 3,683,957
489 3,683,958
495 3,683,955
523 3,683,959
594 3,683,960
609 3,683,962
3,683,963
624.11 3,683,964
625.3 3,683,965
625.48 3,683,966
3,683,967
625.5 3,683,961
625.66 3,683,968

CLASS 139

12 3,683,969
57 3,683,970
122N 3,683,971
243 3,683,972

CLASS 141

1 3,683,973
4 3,683,974
12 3,683,975
59 3,683,976
130 3,683,977
285 3,683,978

CLASS 143

32N 3,683,979
32R 3,683,980

CLASS 144

288A 3,683,981
312 3,683,982
326B 3,683,983

CLASS 145

62 3,683,984

CLASS 146

3,683,985

CLASS 148

6 3,684,585
6.15R 3,684,587
6.15Z 3,684,588
6.3 3,684,586
12 3,684,589
16.6 3,684,590
31.57 3,684,591
33.3 3,684,592
102 3,684,593

CLASS 149

38 3,684,594
41 3,684,595
3,684,596
46 3,684,597

CLASS 150

.5 3,683,986
52R 3,683,987

CLASS 151

6 3,683,988
21B 3,683,989

CLASS 152

225 3,683,990

CLASS 156

79 3,684,598
89 3,684,599
93 3,684,600
148 3,684,601
149 3,684,602
152 3,684,603
171 3,684,604
175 3,684,605
179 3,684,606
187 3,684,607
203 3,684,608
221 3,684,609
244 3,684,610
250 3,684,611
251 3,684,612
289 3,684,613
292 3,684,614
306 3,684,615
322 3,684,616
330 3,684,617
361 3,684,618
380 3,684,619
3,684,620
401 3,684,621
441 3,684,622
504 3,684,623
546 3,684,624
553 3,684,625
576 3,684,626
578 3,684,627
583 3,684,628

CLASS 157

1.1 3,683,991

CLASS 160

37 3,683,993
327 3,683,994

CLASS 161

6 3,684,629
36 3,684,630
37 3,684,631
3,684,636
41 3,684,632
42 3,684,634
43 3,684,635
44 3,684,633
64 3,684,637
86 3,684,638
87 3,684,639
114 3,684,640
129 3,684,641
135 3,684,642
141 3,684,645
160 3,684,643
165 3,684,644
3,684,646
175 3,684,647
3,684,648
251 3,684,649

CLASS 162

3 3,684,650
19 3,684,651

CLASS 164

5 3,683,995
14 3,683,996
52 3,683,997
82 3,683,998
98 3,683,999
200 3,684,000
250 3,684,001
274 3,684,002
362 3,684,003
364 3,684,004

CLASS 165

1 3,684,005
97 3,684,006
133 3,684,007

CLASS 166

55 3,684,008
55.8 3,684,009
129 3,684,010
224 3,684,013
250 Re.27,459
270 3,684,011
275 3,684,014
283 3,684,012
305R 3,684,015
315 3,684,016

CLASS 169

1A 3,684,017
3,684,018
3,684,019
2R 3,684,020
3,684,021
3,684,022
16 3,684,023
3,684,024
37 3,684,025

CLASS 172

15 3,684,027
3,684,028
239 3,684,029
686 3,684,031
700 3,684,030
720 3,684,032

CLASS 173

105 3,684,033
137 3,684,034
147 3,684,035

CLASS 174

15C 3,684,816
52R 3,684,817
52S 3,684,818
53 3,684,819
90 3,684,820
102SC 3,684,821

CLASS 175

39 3,684,036
56 3,684,037
66 3,684,038
85 3,684,039
202 3,684,040
267 3,684,041
302 3,684,042

CLASS 176

724 3,684,013

CLASS 178

4.1R 3,684,822
5.1 3,684,823
5.4CD 3,683,992
5.4ST 3,684,824
5.4R 3,684,825
6.6P 3,684,826
17C 3,684,827
18 3,684,828

CLASS 179

1AT 3,684,831
1SA 3,684,829
1A 3,684,830
1G 3,684,835
2DP 3,684,832
2TV 3,684,833
6E 3,684,834
15BS 3,684,837
15BT 3,684,836
15.55R 3,684,838
100.2CA 3,684,840
100.2C 3,684,839
3,684,841

CLASS 180

5R 3,684,043
3,684,044
3,684,045
26R 3,684,046
77R 3,684,047
89 3,684,048
103 3,684,049

CLASS 181

.5H 3,684,050
31B 3,684,051
32R 3,684,052
33HC 3,684,054
33K 3,684,053

CLASS 182

17 3,684,055
19 3,684,056
93 3,684,057
132 3,684,058

CLASS 184

15B 3,684,059

CLASS 188

36 3,684,060
73.5 3,684,061
251R 3,684,062
265 3,684,063

CLASS 192

3.31 3,684,064
3.52 3,684,065
3.58 3,684,071
4A 3,684,066
4R 3,684,067
84T 3,684,068
85CA 3,684,069
106.2 3,684,070

CLASS 193

7 3,684,072
36 3,684,073

CLASS 194

102 3,684,074

CLASS 195

28N 3,684,652
28R 3,684,653
29 3,684,654
3,684,655
51G 3,684,656
3,684,657
62 3,684,658
66A 3,684,659
139 3,684,660

CLASS 197

1R 3,684,075
127R 3,684,076

CLASS 198

33AA 3,684,077
33AB 3,684,078
139 3,684,079
177R 3,684,080
184 3,684,081
213 3,684,082

CLASS 200

5R 3,684,842
35R 3,684,843
47 3,684,844
61.41 3,684,845
61.93 3,684,846
67A 3,684,847
153SC 3,684,848
162 3,684,849
166SD 3,684,850

CLASS 202

173 3,684,661
3,684,662
3,684,663
227 3,684,664

CLASS 203

9 3,684,665

CLASS 204

40 3,684,666
60 3,684,667
73R 3,684,668
3,684,669
95 3,684,670
98 3,684,671
128 3,684,672
129.2 3,684,673
158R 3,684,674
181 3,684,675
3,684,676
3,684,677
192 3,684,678
195C 3,684,679
196 3,684,680
198 3,684,681
224 3,684,682
300 3,684,683

CLASS 206

1R 3,684,083
45.14 3,684,085
45.31 3,684,084
46R 3,684,086
47R 3,684,087

CLASS 208

28 3,684,684
37 3,684,685
3,684,686
47 3,684,687
50 3,684,688
54 3,684,689
57 3,684,690
59 3,684,691
65 3,684,692
3,684,693
89 3,684,694
110 3,684,695
111 3,684,696
131 3,684,697
140 3,684,698
188 3,684,699
251 3,684,700

308 3,684,701

CLASS 209
75 3,684,088
82 3,684,089
214 3,684,090
403 3,684,091
598 3,683,493

CLASS 210
3 3,684,702
13 3,684,703
25 3,684,704
31C 3,684,705
47 3,684,706
73 3,684,092
84 3,684,093
201 3,684,857
206 3,684,094
242 3,684,095
321 3,684,097
356 3,684,096
374 3,684,098
380 3,684,099
444 3,684,100

CLASS 211
1.5V 3,684,101
40 Re.27,462
88 3,684,102
177 3,684,103

CLASS 212
47 3,684,104

CLASS 213
14 3,684,105
76 3,684,106

CLASS 214
1PB 3,684,107
84 3,684,108
146.5 3,684,109
370 3,684,110
450 3,684,111
517 3,684,112
653 3,684,113
654 3,684,114

CLASS 215
9 3,684,115
3,684,116
3,684,117
38R 3,684,118
56 3,684,119
100R 3,684,120

CLASS 217
95 3,684,121

CLASS 219
10.43 3,684,851
10.49 3,684,853
10.57 3,684,852
10.69 3,684,854
73 3,684,855
97 3,684,856
201 3,684,857
216 3,684,858
354 3,684,859
413 3,684,860
3,684,861
450 3,684,862

CLASS 220
1.5 3,684,122
9F 3,684,123
27 3,684,124
3,684,125
54 3,684,126
86R 3,684,127

CLASS 221
63 3,684,128
167 3,684,129
212 3,684,130
242 3,684,131

CLASS 222
5 3,684,132
54 3,684,133
80 3,684,134
252 3,684,135
386 3,684,136
490 3,684,137

CLASS 223
96 3,684,138

CLASS 224
42.01 3,684,139

CLASS 225
2 3,684,140
65 3,684,141
97 3,684,142

CLASS 226
3,684,143
3,684,144
173 3,684,145
176 3,684,146
178 3,684,147
197 3,684,148

CLASS 228
3 3,684,150
4 3,684,149
19 3,684,151
41 3,684,152

CLASS 229
2.5 3,684,154
14B 3,684,155
3,684,156
16 3,684,157
17RS 3,684,158
45 3,684,159
52A 3,684,153

CLASS 233
1B 3,684,163
20R 3,684,160
26 3,684,161
32 3,684,162

CLASS 234
34 3,684,164

CLASS 235
61.11E 3,684,865
3,684,866
3,684,867
3,684,868
61.12M 3,684,869
61.7R 3,684,863
61.9A 3,684,864
78 3,684,165
92EA 3,684,870
150 3,684,871
151.11 3,684,873
3,684,874
151.3 3,684,872
151.33 3,684,875
152 3,684,876
154 3,684,877
155 3,684,878
156 3,684,879
186 3,684,880
198 3,684,881
200 3,684,166

CLASS 236
1 3,684,167
12A 3,684,168
20 3,684,169
38 3,684,170
78 3,684,171
3,684,172

CLASS 238
10E 3,684,173

CLASS 239
15 3,684,174
22 3,684,175
101 3,684,176
171 3,684,177
189 3,684,178
203 3,684,179
212 3,684,180
242 3,684,181
265.19 3,684,182
3,684,183
311 3,684,184
337 3,684,185
400 3,684,186
414 3,684,187
422 3,684,188
425.5 3,684,189
428.5 3,684,190
3,684,191
452 3,684,192
489 3,684,193
493 3,684,194
561 3,684,195

CLASS 240
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DESIGN PATENTS

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9 : 224,629

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26 : 224,610
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PLANT PATENTS

39 : 3,254

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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : T901,031

19 : T901,029

34 : T901,030

42 : T901,026

T901,027

T901,028

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Robert Gottschalk, *Commissioner*